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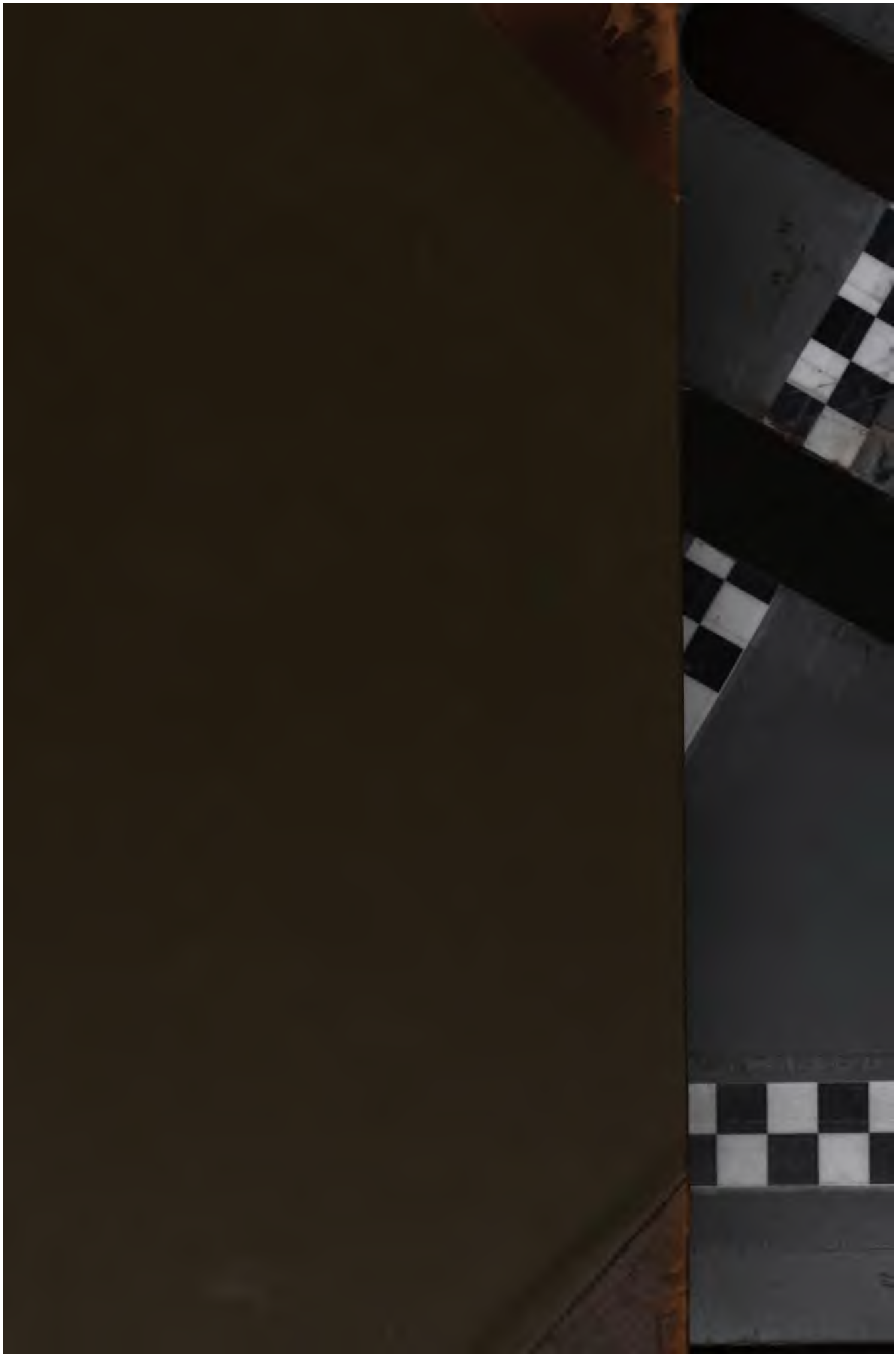

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II

GENERAL VIEW

OF THE

GRICULTUR

IN THE

SOUTHERN DISTRICTS

OF THE COUNTY OF

PERTH.

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GENERAL VIEW

OF THE

AGRICULTU

IN THE

SOUTHERN DISTRICTS

OF THE COUNTY OF

PERTH.

WITH OBSERVATIONS ON THE MEANS OF THEIR IMPROV

By JAMES ROBERTSON, D.D.

MINISTER OF CALLANDER IN THE COUNTY OF PERT

Gt. Brit

DRAWN UP FOR THE CONSIDERATION OF THE BOARD OF AGR
AND INTERNAL IMPROVEMENT.

LONDON:
PRINTED BY J. NICHOLS.
M.DCC.XCIV.

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v.10
no.1

TO THE READER.

IT is requeſted that this paper, may be returned to the Boa culture, at its office in London, with any additional remarks vations which may occur on the peruſal, *written on the margi* as may be convenient.

It is hardly neceſſary to add, that this report, is, at preſent, circulated, for the purpoſe merely of procuring farther informati ing the huſbandry of this diſtrict, and of enabling every one, to his mite, to the improvement of the country.

The Board has adopted the ſame plan, in regard to all counties in the united kingdom; and will be happy to give ever in its power, to any perſon who may be deſirous of improving of cattle, ſheep, &c. or of trying any uſeful experiment in huſ

LONDON, FEB. 1794.

INTRODUCTION.

This ſurvey relates to thoſe parts of the county of Perth, whoſe ſtreams flow into the Earn, or into the Forth. From the county of Fife on the Eaſt, to the county of Dunbarton on the Weſt, the diſtrict lies between 4′ and 1° 29′ Weſt of Edinburgh, and from the Forth on the South to the braes of Glen-Lednick on the North, between 56° 5′ and 56° 27′ North latitude.

On the North and Weſt, this diſtrict is covered by heathy mountains, part of the Grampians, which are interſected with many valleys full of natural wood, and affording much ſhelter. It is principally adapted for paſture, and the rearing of ſheep and cattle; although, in many places, not deficient in producing the common grains of oats and barley.

Theſe valleys preſent to the eye the moſt varied and romantic ſcenes of wood and water, of hill and dale, which are admired by every traveller of taſte. The rivers, in the deep defiles, ſtruggle to find a paſſage between impending rocks, and gloomy woods; and plains, of various extent, burſt ſuddenly upon the eye, which are filled with villages, and well-cultivated farms. Chains of lakes, ſkirted round with wood, are connected with meandring ſtreams, which are ſtored with a variety of fiſh. The hills are clad with

flocks; and numerous herds are browſing on the pa
below. The gentlemen's houſes are generally place
the ſide of a lake, or on gentle declivities, facin
South, with a lawn in front, interſected by the me
ing links of a river; and ſtately oaks on the right
and on the left, together with the riſing hills behin
creaſe their beauty and their warmth.

On the South and Eaſt, the ſoil is of a ſtronger n
and, by proper cultivation, may in moſt places carry
crops of any grain known in North Britain. Th
this part of the county there runs a remarkable ra
green hills, from South Weſt to North Eaſt, call
Ochills, which have been long famous for the large
hardieſt breed of ſheep in the North of Scotland
many flocks have been lately introduced into the val
the Grampians, which in number and in ſize, a
much, if at all, inferior to thoſe of the Ochills.

Strathearn is that great valley, through which th
that gives its name to the country, flows almoſt
ſtraight line for about forty miles. The courſe
Earn, and of the lake from which it takes its riſe,
from Weſt to Eaſt, may have given it a *name* ſignifi
its weſterly direction *, to diſtinguiſh it from th
which runs nearly from the North, betwixt Log
and the tideway.

From the length and ſtraightneſs of this ſtrath, bo
on the South by the Ochills, and by the Grampi
the North, at the diſtance of twelve or fifteen mile
each other, with that fine river flowing in the midd
rich land ſloping down to its banks on both ſide
noblemen and gentlemens ſeats, under the cover o

* Argyleſhire (iar-ghael) has its name from being the weſterly c
Scotland; and Jarr-inn, which is the proper name of Ireland, ſig
weſtern iſle.

ving plantations, behold the buſy-hand of man, engaged in the various operations of agriculture; and enjoy proſpects equally grand, extenſive, and beautiful. They ſee, and are ſeen, by one another, forming one great ſcene, in which every houſe has its proper ſtation, and heightens the beauty of the whole. Drummond-caſtle is a princely ſituation, commands all the proſpect at a ſingle glance.

All the clay-land from Gartmore to Bo-neſs, a tract of about forty miles, is a dead flat, reſembling the expanſe of the ocean, by which it probably was once covered. Through the middle of this champaign valley, with hills riſing at a diſtance on both ſides, the Forth holds it majeſtic courſe, in long circuitous windings, forming ſome links of ſeveral miles. Theſe links are the richeſt ſoil, of the ſame extent, in Britain. The natural fertility of the land, and the convenience of water carriage, by means of that river, (which although only the ſecond in trade, has the richeſt banks, the moſt beautiful appearance, and the largeſt ſtream of any in Scotland,) has crowded this large diſtrict with inhabitants. From the Ochills, and other points of view, this charming proſpect, to which few in Europe can be compared, is enjoyed from Benledi, or Benlomond, on the Weſt, down as far as the eye can carry. Towns and villages, without number, and the manſions of proprietors, with their well-dreſſed lawns, fields laden with the heavieſt crops, and paſture abounding in cattle, are ſpread along the banks of the Forth, as it winds its courſe ſlowly to the German ocean; and where it widens into a path, there the adventurous genius of Commerce braves every danger, ſteering innumerable ſails, and ploughing on the yielding boſom of the main.

PRELI-

PRELIMINARY OBSERVATI

BESIDES the ſpirit of the times, and the infl
into this country, the laudable example of r
country gentlemen, has contributed much, to t
ment of this, as well as moſt other parts of th
They not only embelliſh their own reſiden
incloſe, they plant, they drain, they dreſs
and teach their tenants the trueſt leſſon of
ſhewing how to increaſe their wealth and their
a proper culture of the land, and a better ma
their ſtock. The communications of propri
in the courſe of this ſurvey, not only juſtify
which is apparent to every perſon who looks a
but have a juſt claim to my warmeſt ackno
In general, I have been well ſupported by m
who are no leſs enlarged in their views, and l
rank, than opulent in their fortunes; and if t
report has any merit, it is owing to them.
having aſked their permiſſion, it might be dee
cate to mention their names.

Notwithſtanding the influence of the pr
muſt be evident, to any perſon acquainted
nature, that there is a reluctance among the lo
men, to change old cuſtoms, or to relinquiſh h
have acquired the ſanction of time, and the
ages. This principle, which operates univerſal
it has the moſt happy effect in moſt caſes, yet
baneful conſequence, with regard to the culti

nd. In this respect, it cools the ardour, and ener-
s the vigour of the human mind, enslaved in the pre-
ces and errors of antiquity. Nothing can be more ab-
, nothing more inimical to every species of improve-
t, than an obstinate adherence to all modes of culture.
obstinacy is, however, wearing off, in the district
r review; and it is to be hoped, from the modes of
andry which are already adopted in different places,
from the exertions of the Board of Agriculture, that a
of cultivation will be diffused, which shall surmount
nacy where it remains, and, in spite of old habits,
the people open their eyes to discern their true in-
t. Mankind must be led, they will not be driven.
the enlightened admire the principle, which directs
people to be steady, and not addicted to change, which
e foundation of all order, and of all government:
they deplore its effects, in the particular instance of
andry: Let them also combat the influence of habit
e principle of self-love; let them *convince* men of this
, that by a certain mode of culture, they shall be bet-
d, and better clothed, and become richer, and few
refuse to adopt it. In vain will you threaten; in vain
you prosecute a few; in vain will you plead the au-
ty of statutes and the articles of leases: instead of all
rtillery of law and the parade of power, you need only
in the people's confidence, to convince them that you
their good at heart, and to teach them, by *example*,
to promote their own interest. This conduct will
ually thaw down their obstinacy, and diffuse the genial
th of patriotism, and the exertions of industry,
ugh hearts, which seemed to be frozen and callous.
[illegible] of climate, and the quality of soil, it is re-
[illegible] that the knowledge of agriculture in this dis-
[illegible] progressive from East to
West;

Weſt: and it ſeems to be generally in this
all the kingdom. The land is more fertile
Eaſt coaſt than on the Weſt, in this coun
in moſt others; but every ſoil is capable of
ment, which is adapted to its nature. Why
in moſt caſes, improved; the latter in very
The appointment of Providence makes ma
greſſive; and the progreſs is frequently from
All the arts and ſciences, and inventions of
civilization of the human race, and the prog
the apparent cauſe of the celeſtial bodies, a
Heaven, the introduction of many new plan
of the ſoil, and the improvement of the wo
the beginning of time, been moving weſtwa

If the number of the people conſtitute th
nation, the more the population can be
more powerful will that nation become; b
of inhabitants can only be ſupported by the
increaſe of the means of ſubſiſtence. Th
the ground is, therefore, the firſt care of
How could Egypt ſupport ſuch a crowded p
ſhare eighty thouſand buſhels of corn *daily*
tenance of Conſtantinople, in the reign of C
Great? How could Sicily be the granary of
the number of extenſive cities, and ſuch
armies it had to maintain, in Hiero the II
could the land of Paleſtine, a ſmall ſpot,
ence to ſuch numbers of people, as have be
credible by perſons viewing the preſent wr
that country? One anſwer ſuffices for the
and many other nations, raiſed themſelves
population, of wealth, and of power, wh
ſhallow thinkers, who conſider not the cauſ
nal ſtrength of any nation, is in no caſe t

by the extent of territory: but by the number of its citizens and the utility of their labours: and an increaſe of the numbers of the people, can, on the other hand, be in no caſe ſupported, with permanence, for any length of time, by any reſources whatever, but by their home productions, raiſed and augmented by a ſuperior improvement of the ſoil. Had I the tongues of men and of angels, I would proclaim this to my country from the point of Shetland to the Land's End of Cornwall, until it were heard, and underſtood, and felt, by every man that eateth bread.

Manufactures and other cauſes may increaſe the numbers of people, beyond what the produce of a country can ſupport. In that caſe, either recourſe muſt be had to the importation of food, or the people muſt emigrate: there is no other alternative. When grain and other *victus* muſt be imported into any country, the ſubſiſtence of the people becomes very critical, and the more ſo, in proportion to the quantity required, and the conſtancy of the demand. Their ſupplies depend entirely on the ſurplus and good will of the countries from which their ſubſiſtence comes; their ſupplies depend alſo, on their ability to purchaſe, and on the obſtructions they may meet with from other nations, in going in queſt of food: in ſhort, the country, which cannot ſupport its inhabitants, muſt keep on good terms with all its neighbours, whatever injuries, whatever inſults it may receive, and can never be ſaid to be *truly* independent. If its ſituation be inſular, like Britain, the moment it loſes its ſuperiority at ſea, every creature within may be ſtarved, who cannot be ſupported by the natural produce of the iſland. Many examples might be given to illuſtrate this reaſoning, but it ſeems to be ſo evident, as to ſtand in need of no illuſtration.

The iſland of Great Britain is becoming more and more a manufacturing country every day. This circumſtance will throw the people into towns and villages, and neceſ-

 ſarily

ſarily increaſe the population on the whole; a
of our modern reformers, by miſtaking the ſt
to which we are arrived, reaſon upon the p
the country, not from facts, but from pri
when theſe principles are falſe, the concluſion
roneous.

If the towns and villages have doubled th
within half a century (and ſome of them l
ten-fold), granting that the agricultural po
have decreaſed one third, what concluſion
drawn thence, but that the general popul
ſiderably more than it was. The more t
tures advance, the more will this local chan
dence of the people appear.

It becomes, therefore, an important queſti
lover of his country, how is this increaſed
be maintained? It is not enough to anſwer,
from other nations, becauſe a wealthy count
be in want. The true anſwer is; Raiſe mor
own country; apply your wealth to cultiva
ſoil, that it may produce the greateſt qua
ſiſtence for man.

The eſtabliſhment of a board of agricultur
ture, under the ſanction of parliament, progn
good to this country, and it is a happy prefag
ſucceſs, that no difficulties ſeem to deter, and
ſeems too arduous; and although its ſucceſs
at firſt, from a complication of various cauſ
dering the great wealth, which in leſs than
has flowed into this country, the growing
the people have for improvement; and, abo
tention which many of the country gentle
ſtowed of late, upon embelliſhing their re
meliorating their eſtates, there is no doubt,
rations of this board will, in a ſhort time,

gerneſs to adopt the beſt modes of culture; and that the rules, given through the medium of their publications, will enlighten, teach, and enrich their country.

The proprietors of ſoil may be conſidered as poſſeſſed of a *dead* ſtock; and every dead ſtock requires another ſtock to put it in motion, and make it productive. A ſtock, which, in its rude ſtate, can produce very little of the value it might, by the application of more labours, (which always requires ſtock), may be brought to ſuch perfection, as to produce the full amount of its intrinſic value; and can then only be ſaid to arrive at its real worth or price. How different in value is a pound of flax from a pound of lace, or a fleece of wool from its weight of cloth? equally different is a field or an eſtate uncultivated, from that to which it might be brought by cultivation. But there is this difference, and it is an important one: that the lace and cloth may remain unſold, and in that caſe will produce no ſubſiſtence to the poſſeſſors, whereas an improved field produces ſubſiſtence, independent of all the markets on earth, and is unaffected by the caprice or enmity of ſurrounding nations.

Agriculture is not only an art, but of all arts the moſt antient and the moſt uſeful. Every art is founded upon experiment, and is learned by example joined to practice. Theories may be of uſe in the ſciences. In them you may advance, by cautious ſteps, from the *cauſe* to the *effect*; but, in all the arts, you walk very unſafely, unleſs you proceed from the effect to the cauſe. By a careful induction of particulars, and a faithful collection of ſucceſsful experiments, the farmer is led forward on ſafe ground, makes a ſimilar trial with confidence, and, if the ſoil be of the ſame nature, the climate of the ſame temperature, and the means of improvement equally powerful, his endeavours are generally crowned with ſucceſs. While the ſpeculative farmer ruins himſelf, and is imitated by no man of prudence, the practical farmer ſtudies with care the example of others,

matures their practice by his own experience,
his ſhare to promote the national proſperity, a
this uſeful art to its higheſt perfection.

The land in this ſurvey, ſeems to divide t
Scotland on the South, which is generally ad
raiſing of grain, from that on the North, w
few exceptions, is more fitted for paſture. It
gular, that the counties North of the diſtrict un
abounded moſtly, in former times, with firs,
ſtill to be found in the moſſes; and that part o
on the South, carried oak, and other wood
kinds, but no firs. Nature herſelf, which
guide in theſe matters, appears to have wiſel
bleak mountains with a mantle, which is fo
and warm, and to have planted naked timber w
ment and ſhelter were leſs neceſſary, leſt the
the ground ſhould be too much intercepted fr
of man. Another diſtinguiſhing feature of th
is, that it contains more oak-woods, than are t
perhaps in all the reſt of North Britain.

It may be more ſuitable to the brevity reco
not to detail the ſubſtance of this report, under
of a tour, but to range it under the followi
diviſions.

I. THE NATURE OF THE SOIL.

THE ſoil conſiſts of all the varieties known in Scotland.

1. *Clay.* Along the Forth, from the bridge of Gartmore to the bridge of Allan, a tract of eighteen miles, all the flat land is a deep rich clay, of various degrees of fertility, the blue being generally more fertile than the yellow. This ſoil is ſtill covered to a great extent, and ſeems once to have been wholly ſo, by a tract of moſs from ſix to fifteen feet deep. The valley in which it lies is ſuppoſed to have been formerly covered by the ocean, not only by reaſon of its being but a few feet from the preſent level of the tide, but by reaſon of marine foſſils, which are dug up in various parts; and if this horizontal ſtratum of clay be compoſed of ſea ſleech or ſediment, that circumſtance accounts for its uncommon fertility.

The next greateſt tract of clay within the compaſs of this ſurvey is from the bridge of *Forteviot* on the *Earn*, to the confluence of that river with the Tay, at the point where they meet, which is called the *Rhind* *. The ſoil in this tract is not ſo frequently blue, as in the former, it is chiefly of a pale brown, owing probably to the mixture of freſh water ſediment carried down in great quantities by the river, and ſuperinduced at firſt over the other ſoil; but by the action of tillage now incorporated with it.

There is a ſmall tract of the ſame kind of ſoil at *Gogar*, and *Menſtrie* on the *Devon*, and its nature and appearance

* The point.

may be owing to the ſame cauſe. There may
ſpots of ſtiff or clay ſoil in other places, but in
account, extreme minuteneſs cannot reaſonab
pected.

2. *Haugh.* All the land flooded, time imm
commonly called *haugh*, and wherever the rivers
brooks do not flow from lakes large enough t
reſervoirs for holding the torrents from the mou
higher grounds, they are liable to ſwell ſuddenl
flow their banks, and to depoſit a great quanti
ment occaſionally, on all the flat land within t
theſe inundations. Where the current is rap
gravel are left; where it moves ſlowly, ſand is
and where the water becomes ſtagnant, the ſ
compoſed of the fineſt particles of earth. Th
its barrenneſs or richneſs depends on the nature
carried down by the ſtream, and on the rapidity
of the current. There is a conſiderable extent
of haugh ground, wherever the Earn flows bey
dinary channel. It alſo abounds on the Pow,
lan, on the Goodie, and in various parts of t
of Balquhidder and Callander.

3. *Loam.* The loam in this diſtrict is ſo
ſperſed with other ſoils, that it is impoſſible to
particularly, without being too minute. Wh
have been the original quality of a ſoil, if it ha
in tillage, and enriching manures added to it,
becomes loam, as may be ſeen around all the
Scotland. This change, however, takes place in
ſooner than in that which is ſtiff.

There is a fine bank of loamy ſoil, of conſide
from Rednock-houſe to Blair Drummond. A
the haugh, on the ſides of the Pow, from Me

ward to its confluence with the Earn, there is a ſtrip of fine loam. On the higher banks of the Earn, beyond the flat land which is either flooded occaſionally, or has been formerly traverſed by the river, there is a long tract of loam, interſperſed in different places with a mixture of till or clay.

Much of the land on the ſkirts of the moor of Archill, and that of Maderty, and in ſimilar ſituations, is called loam; but a greater proportion of it is of an inferior quality, having a mixture of peat earth. There is loam at Tullyallan, near Culroſs, and in a ſmaller extent near other places, which have been for ſome time under a good ſyſtem of cultivation.

4. *Till.* Till abounds on all the north face of the Ochills, from the vicinity of Dunblane to Abernethy, a tract of at leaſt twenty miles; and it may be remarked, in general, that the ſoil on the north ſide of moſt hills is cold, deep, and ſpouty, while that upon the ſouth conſiſts of a mould more light, generous, and dry. The reaſon is obvious. There is a red kind of till about Auchterarder, and Dunning, more dry and generous than the former, and capable of high cultivation. On the face of the bank, from Methven to Ferntown, and on the other bank below Kier, there is a ſimilar ſoil on a bed of rock marl. Wherever there are rocks of red free-ſtone, as in the three tracts laſt mentioned, the ſoil is of the ſame colour, and generally of a good quality; and wherever the ſtones are granate, if the ſoil be wet, which happens, in moſt caſes, on the face of hills that are not very abrupt, there is a pale-coloured till, which is always more barren, and more difficult to be drained, than the red. In this pale clay-coloured till, on the ſlopes of hills, where the ground is uneven, and riſes into ſwells, the water from the higher land ſinks between the eminences, ſpouts up at the foot of them; and, from

the

the cloſeneſs of its texture, both the ſpring
ter are ſeldom drained off effectually. Of
the moſt unfriendly, and its natural ſterili
be overcome, eſpecially where there is lit
Till, of this nature, is found on both ſides
Kinbuck, in the Glen of Candie, in the b
Culroſs and Tullyallan, all the way t
where it is very wet, and reluctant to rew
of the huſbandman. Both ſides of the moc
rates the Forth from the Teath, near their
a wet, unkindly till; and much of the ſand
of the Loch of Monteath, to ſome diſtance
ſoil; but in both theſe tracts, many places
ought to be drained.

5. *Sandy or gravelly ſoil.* Light free ſo
verized, of which a great proportion is ſa
the moſt abundant within the compaſs of t
the valleys weſt of Crieff, Callander, and
ſiſt of this light ſoil, except, where at the f
or under the inundations of a river, the
nally flooded, and haughs are formed, or
face of hills, where the ſoil is ſpouty,
fines of moors, where the land has a mixtu
There is a conſiderable extent of this kind
head of the Allan, along the Machany, an
the Ruthven. In the vicinity of Muthill, t
till and partly light. Round the moor of
Monzie, Crief, and Monivaird, on both ſid
it is generally a free truſty ſoil; and from D
lander it is nearly of the ſame quality. T
ſpots of light land in the pariſhes of Mucka
von *, and at the confluence of the May and

* The deep Glen.

other ſimilar brooks, with the rivers into which they fall. A gritty light ſoil is to be met with in the north ſide of the pariſh of Gaſk, and in general, on that ridge of higher ground betwixt the Paw and the Eam, where it is free of moſs, and not flooded by ſmall ſtreams: but it appears unneceſſary to be more particular.

6. *Moſs.* The largeſt tract of moſs is in *Monteath*, which has given its name to a whole ſtewartry. It is called the *warm moſs* from the lowneſs of its ſituation, and the ſnow ſeldom lying ſo long upon it, as on moſſes which are more elevated. It is alſo called *Flanders moſs*, probably from its horizontal, or flat, appearance. This whole tract of moſs, from the bridge of Gartmore to the bridge of Drip, may be computed at 10,000 acres.

A thin ſtratum of moſs, lying on a bed of gravel or ſand, is called *moor*; and the culture proper for this ſoil is extremely different from that of moſs, and the culture of one moor from another, according to the depth and nature of the ſubſoil. The moor of Archill, computed to be upwards of 10,000 acres; the Sherriff moor, which may be reckoned two thirds of that extent; the moor of Dollary, which ſtretches for ſeveral miles caſtward, and has only ſome ſtraggling farms in the moſt fertile ſpots; the moor of Dalganroſs, about 160 acres; and ſome moor and moſs in the back ground, at Culroſs, about 100; all crave the attention and induſtry of man. The means of their improvement ſhall be pointed out in the ſequel.

2. SYSTEM OF HUSBANDR

THE late Dr. Robertſon, who throws light o
ject of which he treats, ſays, in his hiſtory
" That hardly any region of the earth fu
" ſpontaneouſly with what his wants requ
" mildeſt climates, and moſt fertile ſoils, hi
" try and foreſight muſt be exerted, in ſon
" ſecure a regular ſupply of food." If labour
be neceſſary in thoſe fertile regions to whic
how indiſpenſible muſt they be, in the ſterile
hoſpitable climate of North Britain!

In northern latitudes, population has alway
pid, and the bounty of nature ſo ſcanty, that
tion of the ground muſt have been very early
We have no records of any æra in which ti
requiſite in this country; and the preſumpt
more land was under the plough in remote a
the preſent times. One thing at leaſt is
ground has been formerly cultivated, which is
climate in that altitude now ſo forbidding, ar
of the air ſo piercingly cold, that no grain we
at this day, arrive at any degree of maturity.
probable, that the hills were moſt eaſily clea
the land in the valleys was very much wooded

The huſbandry of the particular diſtrict un
ration, was in a moſt wretched condition, ev
fifty years ago. The land was always occupied
by the different tenants on the ſame farm, an

* Like the common-fields of England.

by coterminous heritors. The houſes were in cluſters for the mutual protection of the inhabitants, and the farms were univerſally divided into *out-field* and *in-field*, except in the neighbouroood of the larger towns, where dung was to be got to purchaſe. I have ſeen outfield *carſe* within theſe twenty years, in ſome of the beſt parts of Monteath. Under this management, the land, near the farm-houſes was cropped alternately with oats and bear; and ſometimes two crops of oats, or more, were taken ſucceſſively. The whole dung was laid on with the bear crop; and, in ſome caſes, the farmers unroofed their houſes, and dug fail or turf from the beſt ſpots of their natural graſs-fields to increaſe the quantity of their dung. Their infield being dunged every ſecond year, and in conſtant tillage, became exceſſively foul. In ſome places, a crop of peaſe was introduced between the oats and bear, and in the beſt ſoils, eſpecially the clay, a crop of beans, with ſome peaſe intermixed; which was deemed an improved rotation in the old ſchool.

The outfields lying fartheſt from the townſhips, were *taithed* or dunged, by confining their cattle in folds at leaſt over night, during Summer and Autumn, upon that particular ſpot of the farm, generally a ninth part of the whole, which was to be ploughed next Spring. In ſome parts of Strathearn the out-fields were watered. Three crops or oats, and ſometimes more, were taken from theſe out-fields ſucceſſively, until the land was exhauſted to ſuch a degree, that during the two firſt years of its being in paſture, it carried very ſcanty crops of graſs; and, if the field had any declivity, the fineſt particles of the ſoil were carried away in the rainy ſeaſon, for want of a ſward. Lint was generally ſown in the beſt part of the out-fields, eſpecially after water.

By the regulations of old leaſes, the tenants were reſtricted not to *eff-crop* the in-field (*i. e.* not to take two

ſucceſſive crops of oats), nor to fourth-crop the
baugh-ley (*i. e.* ley not taithed or watered at ſix
And, in very old leaſes or agreements, the t
ſimply bound to *tirds* and *twirds*, which impli
lation abovementioned. A deviation from th
cropping, uniformly ſubjected the out-going t
mages, at the inſtance of the in-coming one,
Sheriff-Court.

The old ſyſtem of out-field and in-field ſtill
ſome places of this diſtrict, eſpecially toward
and although moſt of the proprietors have,
years, inſerted in their leaſes better regulati
bandry; yet, from various cauſes, theſe have
little enforced. In many caſes, the leaſes have b
by perſons better acquainted with law and acc
with economy; by which means blunders a
ſerted, and articles of importance inaccurately
ſo that in moſt actions betwixt proprietor and
lative to deviations from the articles of a leaſe
latter is found to be bound by no regulations
mages awarded to the former are very inadeq
injury ſuſtained. A remedy for this evil ſhall b
when the means of improving the country are
At preſent, however, it is my duty to aſſert, tha
ſeems to be more evident, than, That no eſta
ſibly be improved, let the regulations in leaſe
good, and the reſtrictions ever ſo well detailed
landlord ſhall either ſuperintend his own prop
factor be acquainted with huſbandry, and ſub
arduous taſk of directing agricultural improven

1. *Lime.* Lime is a manure in general uſe
be diſtant, the farmers endeavour to carry i
while the water is diſſipated and the lime light
object to the farmer to remove his ſhells as

ſible, after the lime is drawn from the kiln, eſpecially when the carriage is long; for it is known from experiment, that a ton of lime expoſed twenty-two days to the air, after calcination is augmented in weight to 30cwt. and ſome kinds of lime even to 35. This I think is the reſult of an experiment made by Biſhop Watſon. It is almoſt unneceſſary to ſerve, that burnt lime-ſtone is called ſhells, becauſe marine ſhells, being burnt and reduced to a powder, was the only lime known in this part of the world, before pit-lime was diſcovered.

Farmers in the eaſt end of Strathlern carry lime from the ſhore of Perth, from Forthar, and from the Lomonds. Lord Elgin's lime at the ſhore coſts 1*s.* 8*d.* *per* boll; that from Sunderland 2*s.* and that from Burnt iſland 2*s.* 2*d.* all wheat meaſure. The lime from Farthar coſts 3*s.* 6*d.* *per* boll, and that from the Lomonds 3*s.* Linlithgow meaſure, the carriage being included, for three miles beyond Abernethy, and the ſhore lime 2*s.* 4*d.* when carried ſix miles from Perth.

The Lime from Perth is carried far up Strathern, till it meets the lime from the ſhore and neighbourhood of Stirling. About Tullyallan, and Culroſs, the farmer's uſe Lord Elgin's lime, at 10½*d.* *per* boll. About Muckart and Foſſway, lime is found in the neighbourhood. At Stirling, the lime ſells for 8*s.* 6*d.* the chalder, peaſe meaſure, at 10*s.* Linlithgow meaſure, and is carried into all Strathallan, and the greateſt part of Monteath. Lime is found at Callander and Aberfoil; but in leſs quantities. That at Callander, on the property of Mr. Hamilton, of Burdowie, is a beautiful marble, having a deep blue ground, finely variegated with ſtreakes of a pure white. It is well known that all marble is compoſed of calcareous earth, and makes lime; but all lime-ſtone is not marble. A quarry of lime-ſtone has been lately opened on the ſide of Lochern; and when carried by water to the eaſt end, the ſhells

are ſold at 2*s.* 2*d.* *per* boll, and the raw ſtone
chalder. As this quary is inexhauſtible, cr
the hills to the weſt end of Lochtay, and app
ground in many large rocks, were it not for th
fuel, this ſtore of limeſtone would be of great u
adjacent countries. This vein extends northwa
hidder and Strathyre; and the farmers, after b
the ſize of a turkey's egg, burn it with peats an

The quantity laid by ſkilful improvers on
from 40 to 50 bolls to the acre; on light l
gravelly ſubſoil, 30 or 35 bolls, are accounted
doſe. In ſome places of the carſe, or clay la
not eaſily pulverized, they lay on 80 or 90
ſometimes laid on fallow, immediately before
row; on barley and graſs ſeeds, either before
barley is ſown, and in ſome caſes with the pre
where turnips are uſed, to prepare the ground
Lime is in ſome inſtances mixed in compoſt
ſpread on the green ſward, according to the pra
ferent places, and the degree in which huſband
ſtood. But the longer that lime is kept within
plough, until it be intimately mixed with the
virtues exhauſted, ſo much the better.

Quick lime, intended for wheat, after a fa
barley or graſs ſeeds, ſhould be plowed in with
furrow, before the ſeed is ſown: for oats a
ought to be laid on during the preceding autun
paſture, or a top dreſſing, in the autumn, or ear
rather than in ſummer or winter; becauſe, if
be dry, the graſs is burnt up by the lime, an
its virtues are leſſened by the froſt, and it does
fully attract the influence of the air.

There is nothing more common, an[d] perhaps
more difficult to be accounted for, than, when li
on ſhort heath, or other barren ground, whic

, to ſee white clover, and daiſies, riſing ſponta-
y and pic tifully, the ſecond or third ſpring thereafter,
no: a veſtige of either, nor even a blade of graſs, was
een before.

ſeed of ſome plants have wings, and, when fully
pread their ſails to the wind; the ſeed of others have
eards, which makes them buoyant, and raiſes them
the air, in queſt of a new ſettlement; but it is vain
the heavy globular ſeeds of clover and daiſies, with-
ard or wings, are wafted about by the winds; it is
ſcrd to ſay, that they are brought there in the lime,
has been burnt; and it is equally ſo, to allege that
e depoſited from the ſtomachs of birds, without ha-
en digeſted, as ſtone ſeeds ſometimes are; or that
would pitch upon the *very ſpot*, where lime, or other
ng manures, had been ſpread, to depoſit the white
nd daiſy ſeeds, in ſuch quantities, and in no other
ear it; nor at any former time. Crude dung from
aw-yard, indeed, produces weeds, after it has paſt
the ſtomach of the cattle; but they ſwallow the
f theſe weeds, not as *food*, but in being mixed by
with their food; whereas, if birds are not ſuppoſed
low the ſeeds in queſtion, not by *chance*, but for the
urpoſe of nouriſhment, the argument is given up.
ſtinct of animals is not ſo erroneous as to direct them
evers in the uſe of food which would afford them no
nent. Laſtly, it is altogether unphiloſophical, and
y to common ſenſe, to have recourſe to the doctrine
uivocal generation, by imagining that any thing can
e itſelf, or that the ſeed of clover or daiſies can be
ed without a cauſe. We are ſurrounded with myſ-
on every hand; and many things, both in the material
tellectual world, appear unaccountable to us, owing
ſhallowneſs of our underſtanding. The ways of God
rk and intricate, as we often attempt to inveſtigate
them

them in vain. If an anſwer muſt be given, t
ſuppoſed probable, that the ſeeds of all plants
at the ſame time with the earth itſelf, and de
ground, to remain *there*, until they are called
degree of fecundity in the ſoil, and warmth in
gether with the moiſture and expoſure, and c
ſtances, which correſpond to their nature.

2. *Marl.* Marl is found in many places,
quantities, about the middle of Strathern, from
to Gaſk; and on the head of the Atlan, fro
to Ardach. It is ſold from 8*s* to 10*s*. *per* boll,
cubical feet. The ordinary allowance to an
40 to 60 bolls; and the moſt experienced imp
40 bolls to the acre, for a ſecond marling, aft
of 14 years. It is beſt adapted to light la
eaſily ſtimulated; and its effects are immediate

The firſt marl diſcovered in this diſtrict wa
of Auchtertyre: and it has been uſed very ſucc
the lands in that neighbourhood, for a long t
it is applied with caution. The expence of
amounts to 3*d*. *per* boll, and a ſtratum of moſs
twelve feet, muſt be removed, before the bed
be wrought. Sir William Murray ſhewed n
thin gravelly moor, laid down with marl alone
of which, by ſuch a dreſſing, is equal to the
of four ſheep. In ſome parts of the ſame moo
not been ploughed at all, the heath was baniſh
years, by a lop-dreſſing of marl, and was ſu
fine cloſe graſs.

Marl is found for the moſt part in ſmall lakes
locked bogs and moſſes, where there had beer
or pond, during the multiplication of the an
wilk, which produces the marl, lives only o
multiplies prodigiouſly. They are often found

the long graſs, which grows in the pools where they breed; and when the graſs decays, it is laid in horizontal ſtrata, by the weight of the animals, on the marl bed. Theſe ſtrata aſcertain the number of years, which the marl has been forming, in the ſame manner as the rings of trees denote their age.

When the wilks happen to generate in ſprings, or other ſmall collections of water, that are in moors or other higher ground, they are often carried down, in the wet ſeaſon, to the firſt ſtill water; but if the ſtream is not able to carry them to a pond, they are ſometimes left in the face of hills, and form beds of marl in that ſituation. In Glentill, a property belonging to the duke of Athol, there is a field of marl of this kind thirty feet deep.

3. *Watering.* From the remains of old tracts, made for conveying water, it appears that the practice of watering land, in various parts of Strathern, was more frequent in former than in later times. Water acts more as a ſtimulus than a manure, eſpecially when the ſediment is ſcanty; and by the ignorance of tenants in overcropping their land, the ſoil is often reduced ſo much, that, for ſome time after, it can neither carry graſs nor corn. The introduction of marl and lime has alſo contributed to bring watering into diſuſe, without attending to this evident conſequence, that theſe will have the ſame effect upon ground which is kept in conſtant tillage.

An opinion prevails among many farmers in Strathern, that water brought upon graſs ground, which had been laid down ſome years before with lime, will deteriorate the ſoil in place of doing good. But this novel prejudice againſt water deſerves no countenance; for one of the moſt ſkilful gentlemen farmers in Monteath has often watered land, after it had been laid down with lime; and a gentleman in Strathern, of approved knowledge in agriculture, has often fol-

lowed the ſame practice with ſucceſs, after the la
laid down with marl.

In every valley in the highland part of this di
is ſuch command of water, that the extent of gr
and of the fineſt graſs, on the face of every hil
increaſed to an aſtoniſhing degree: and on the
Ochills, at Muckart, Glendevon, and other
quantity and quality of the graſs, both on th
paſture, might be much ameliorated, indepen
profit ariſing from a better crop, when the l
arable would be opened up.

If the ſoil be light and dry, with a proper fa
mand of water, there is no ſpecies of manure
more plentiful, or more enriching, than water.
the tract for conveying the water has once been
judgement, it may remain for centuries, requiri
little repairs occaſionally, when it is to be uſe
furniſhes the manure without any farther ex
every fall of rain brings a freſh ſupply of the ſi
of earth from the upper ground, to encreaſe t
and meliorate the quality of the ſoil below.
mer look at every little valley in the front of his
there is a ſpring, or where water deſcends wit
the ſurface, in rainy weather, or in the time o
from the quality of the graſs in theſe, he wil
rich and beautiful carpet he might, by a litt
ſpread on all the face of his heath-clad hills.
ſheep maſters of this diſtrict are brought to ſee,
it is their intereſt to have plenty of food for
when they deſcend from the high and bleak
in queſt of ſhelter and of nouriſhment, it is t
that inſtead of burning the heath, which is a
bour, they ſhall once for all introduce water,
the heath to riſe no more. When the fine graſſe
coarſe, which grow in moiſt ſoils, will remain t

ſeverity of winter, and even the finer graſſes, if not eat bare, will ſhelter the ground, and occaſion a fine ſpring of early graſs. Graſs, which has a blanched appearance in winter, and ſeems to be entirely decayed, acquires a certain degree of verdure in ſpring, by a new circulation.

I have diſtributed many drawings of the level for conducting water, recommended by Sir John Sinclair, where the ground appeared to be capable of that improvement; and the attention of the gentlemen, and of the generality of the tenants, to its conſtruction and utility, gives hopes that it will be uſed.

4. *Moſs.* Moſs, which has hitherto been little tried as a manure, has a better effect than moſt people are aware of. The tenants in the vicinity of Auchtertyre, caſt it off to a conſiderable diſtance, to be ſpread upon their leys; and the proprietor ſhewed me ſome hard riſing ground, which had been laid over with moſs, where the graſs was as thick and verdant in the month of November, as any of the adjacent land, which had been dreſſed with marl.

Mr. Dundas, of Blair, near Culroſs, carts off the moſs, which has been floated down the Forth, and lays it in his ſtack-yard to form a compoſt with the dung, by the treading of cattle. It is probable that the ſaline particles, which it has imbibed in its courſe, may increaſe its virtues.

On a little patch of ground in my own poſſeſſion, there were laid, about two years ago, upwards of 150 carts of the moſs; but before laying it on, it was made up, the preceding autumn, in the form of a long hill, having one cart of dung to every three carts of moſs. It lay in this ſtate till the next ſpring, was finely pulveriſed, and uſed with ſucceſs.

Upon light land, where there is a great proportion of ſand or gravel, the moſs retains the rains and the dews, which that kind of ſoil could not naturally retain; and by the ſupply of manure, preſerves ſuch a porous ſoil from

the effects of ſevere drought. Even after it is p
it not only acts as a ſponge, but forms an add
ſtaple of the land no way to be diſregarded. Th
Providence is wonderful, not only in this, bu
other caſes. In every tract of this ſurvey, and
moſt other places, where the ſoil is ſandy and p
are patches of moſs, and ſome ſwamps near at h
vite the induſtry of man, to lay them on his
and render theſe more retentive of the dew of He
marl is found for the moſt part in bogs and
ſuch ſoil, to correct its quality. Shell ſand
near Culroſs, and begins to be uſed as a manure

5. *Compoſt dunghills.* Beſides dung in its
which every farmer uſes, there are a great num
poſt dunghills made within the limits of this ſu
farmers mix lime, and earth, and dung;
lime and earth; and others dung and e
turn them in ſpring, others not. But in gen
of compoſt dunghills is in proportion to the
intelligence of the tenantry; with this exceptio
Abernethy there are ſpirited improvers, who,
making compoſt dunghills, lay on every manu
In making compoſt dunghills, that ſoil to be intr
a field is preferable, which conſiſts of a qualit
that of the field itſelf.

6. *Wheat.* The culture of grain is the gre
huſbandry. As to wheat it is ſown on the clay
places, and in ſome places on the upland, whe
ſtrong, and poſſeſſed by tenants, who are in
enterpriſing; particularly on the Devon near N
twixt Tullyallan and Valleyfield, on both
Earn, for ſeveral miles above its junction wi
about Drummond Caſtle, alſo near Dunblane
upon the Pow. The culture of wheat has

rit of improvement has begun to dif-
e county; and it will ſtill increaſe in
wledge and wealth of the poſſeſſors of
s not long paſt, ſince it was thought,
grow on the Earn, weſt from Kilgriſ-
hant of Roſſie, ſet the example, not
ſo in other improvements; and in a
le was eagerly followed. Wheat was
vicinity of Crieff by the late Sir Pa-
chtertyre, before the middle of this
informed, on good authority, that he
crops of wheat on the ſame field, by
ſbandry, and that the laſt crop yielded
Wheat is commonly ſown after ſum-
me caſes upon clover ley, according to
by different farmers. It is pickled with
afterwards mixed with quick lime;
and cheaper pickle, which is found to
The white, and the red, are both ſown

kept good for a long time by changing
other, according to the practice of pre-
f other grains; and twelve or fourteen
produce eight bolls at an average, and
his grain is ſown from the 10th of Sep-
as, according to the ſeaſon; and if it
loſing the proper opportunity, or *tid* of
the wheat ſeed is delayed, only giving
y above ground before winter, ſo much
early wheat runs much to ſtraw, and
ies the fulleſt and heavieſt ear. If it
g the ground, when the blade is very
with ſheep would do it no harm.

7. *Peaſe and beans.* A mixture of peaſe an
various proportions, is ſown in almoſt all p
the farmers cultivate wheat; and, in ſome
clay ſoil, where wheat has not been tried.
precarious crop in a late ſeaſon, and is chiefl
for the ſake of the ſucceeding crop of barley.
raiſed on many ſoils, which have not ſtrengt
mixture of beans. Peaſe and beans are ſown
poſſible in March, and in ſome places ſooner.
or ſix and a half firlots to an acre, for the moſt p
bolls of a return. I heard of one inſtance of
with oats; and Mr. Stirling, of Kippendavie,
the experiment, ſaid, that the oats not only ſu
peaſe while both were in the growth, whic
crop early, but kept them ſo open and upright
were bound, as to admit freely the circulat
by which means the peaſe were got in
uſual.

8. *Oats.* There is a great variety of differen
in this diſtrict. The old Scotch late oats prev
grange is introduced in many places, which m
well, and is a little earlier. Blainſlie, which is
is much uſed, eſpecially on the higher grou
runs to ſtraw, and yields leſs meal than the co
Norfolk and Eſſex oats have been tried, wh
weeks earlier than the common oat, and yield
but theſe are apt to ſhake, if allowed to be
before they are cut down, and their ſtraw is b
der for cattle. Another kind of Blainſlie has
introduced into the Weſt part of the country, w
a boll of meal for a boll of oats, is two weeks
the common oats, is not apt to ſhake; and th
good in all reſpects. We have very little black
uſed to be ſown in moſſes, and ſtill abound in

nd none of the bearded grey oats,
in the braes of Inverneſsſhire, and
ntries. In high wild moſſy ground,
and colour, will ſoon become grey
nt ſowing; and, in elevated lands,
the oats ſoon become bearded, and
nd, it is probable, that when any of
in tillage, the grain ſown was this
which is the pooreſt of all grain, and
ſeed of good rye-graſs. Such is the
and ſuch a controuling power does
er productions, that we not only find
grain, and other plants, but beaſts,
and even the human race itſelf, va-
circumſtances, moulded to the cli-
the ſoil, and accommodated to their

ts begins in March, or early in
d is good, ſixteen or eighteen pecks
e, and produce ſix or eight bolls.
g is more, and the increaſe leſs. But
has no more than three returns,
nt in ſome of the higher parts of the
s were calculated, it is a loſs to at-
any grain. Nature intended theſe
d they will be more profitably em-
ttle, than under any other ſyſtem.
ners in Monteath, give the oat-land
ore the ſeed is caſt in, if the land be
fills the deep furrows, is a ſaving of
ſpring up at once, and ripen equally
ne gentlemen always harrow, and
rley land before the ſeed is ſown.

9. *Barley*.

9. *Barley.* Cheſter bear, which conſiſts o
in the ear, and barley, which conſiſts of tw
ſometimes ſown ſeparately, and ſometimes n
on the ſtronger ſoils, the mixture, or maſlein
ſtrong, and bear where the ſoil is light. Siberi
barley, and alſo Ruſſian barley, of ſix row
which is commonly known by the name of *b*
tried, but fell into diſuſe. Barley, with or w
ſeeds, for the moſt part ſucceeds peaſe and
theſe are ſown. Where wheat is not ſown, it
nips and potatoes; and, in ſome places, it i
ley, where the thirlage on the oats is accounte
In this caſe, the graſs-field is ploughed beſo
harrowed thereafter, when the graſs begins t
the ſeams, and, at a proper interval, is tur
the ſeed furrow. By this management, go
raiſed on clover ley, of three years old, even
nure. Ten pecks to the acre, or twelve,
not ſown, commonly produce ſix or ſeve
ſometimes more, when the land is in good or
up after ley. Barley is ſown in May; and i
of the highlands, where the ſoil is of a hot
the powerful reflection from the hills produc
getation, it is often ſown in the beginning of
weight of the barley, and the return from the
and all other kinds of grain, depends ſo
quality and treatment of the ſoil, that it is
ſpeak of theſe matters with abſolute preciſion

The reaping ſeaſon begins in ſome places
dle of Auguſt, and in others by the beginnin
ber; and, unleſs the ſeaſon is unfavourable
is finiſhed by the latter end of October. In t
and other places near mountains, when the
pens to be late, this circumſtance is not ſo fr
caſioned by the greenneſs of the crop, as by

n the Atlantic are attracted by theſe
down deluges, at this critical ſeaſon,
coaſt is in a great meaſure free. In
ve farmer calls out all his people,
day ſets in, ſelects all his wetteſt
, ties them near the ear, and ſets
of an umbrella, half-diſplayed; and,
the ſheaves, which had been wetteſt
he drieſt before night. The nature
taken notice of afterwards.

ture of flax is univerſal in this diſ-
d to a great extent in any one place.
grow ſome for their own uſe; and
favourable for this crop, they are
whoſe ſoil does not raiſe it to advan-
ſeems to be of too cloſe a texture
and binds too much to allow the
ſelves in queſt of nouriſhment. The
weak to carry a heavy crop, and is
by it, to render the lint crop a ſuf-
the chance of failure in the ſubſe-
teſt ſoil for lint is loam, and haugh-
ows are not ſo cloſe as in clay or
of the ſoil fully equal to the food

brook in the highlands, where the
plenty of fine ſediment is depoſited,
ldition to the ſoil, carries amazing
banks of our large rivers, where the
k-water, the lint is generally a good
aiſed ſucceſsfully, the ſecond crop,
which ſaves weeding; but this ought
:cauſe it is a bad rotation.

Theſe countries, from which the greateſt
flax is imported, are ſituated on the banks
and gently-flowing rivers, which, by their flo
in the courſe of ages, formed the richeſt and
mould: and, this may ſhew us, what is its
and where it can be cultivated with moſt p
country.

If people were at pains to preſerve this ſeed,
that of other crops, an immenſe ſum would
nually to the nation. Some ſkilful perſons ha
purpoſe, ſet up the lint-ſheaves in ſtacks lik
have ſtacked them until the next Spring. The
eaſily rubbed off by a roller, without injury to
the ſtack. The ſheaves ought to be laid head to
this operation. The profit on ſaving the ſee
from 5 to £6 *per* acre. The people have
ſummer before them, to water and dreſs their
out encroaching on the other operations o
which it muſt do, if manufactured the autumn
But if this proceſs be thought tedious, or that
they lie long out of their money, the lint ma
a few days after it is pulled, the capſules dried
or on a kiln, and the lint watered immediately
The ſeed ought to be changed annually from
another, as the farmer changes the other ſeed

It muſt, however, be acknowledged, tha
makes no return of manure; and, by the thic
ſtalk, the ſmallneſs of its leaf, the number of
ries, and its fibrous roots, impoveriſhes the ſo
degree. But, when it is managed with judger
purchaſe manure, and beſides bring a conſider
nor does it rob the ground more than other
plants, eſpecially wheat, provided the land
whenever the crop is taken off. Red-clover

graſs ſeeds, grow, when ſown with flax ſeed, rather better than with any other crop.

11. *Roots, Potatoes.* The culture of potatoes is carried to a great extent in this county, eſpecially in the highlands. In a rainy climate, and on a light ſoil, no ſpecies of crop promiſes equal returns to the huſbandman, or equal utility to the public. When new ground is to be improved by a potatoe crop, they are planted with the ſpade, in what are called lazy-beds. For the moſt part they are planted with the plough, in drills; which practice was firſt introduced into Monteath, by Mr. Buchanan, of Camſmere. At other times they are put in with a foot-dipple, and hand-hoed, after the firſt covering with the ſpade. This method is ſaid to give the greateſt return by the acre, but the plough requires leſs labour, and is by far better for the ground.

In writing a report of this kind, it does not appear to be my province to give ſpecific rules, about raiſing potatoes, or any other plant; which would lead into a long detail. All theſe rules are minutely pointed out in ever book upon farming, already in every perſon's hand.

Potatoes ought to be raiſed frequently from the ſeed, becauſe they degenerate faſter than is commonly ſuppoſed. Unleſs the ſeed is renewed, or changed, they ſoon become dark-coloured after being boiled, at the root end, where there are feweſt eyes. The proceſs of raiſing them from the ſeed is well known, and exhibits a beautiful and unexpected variety.

This root is of all others the moſt valuable. It grows on the pooreſt ſoil, is in ſeaſon at leaſt nine months in the year, is reliſhed by every animal, affords an excellent food for man, with milk, or a bit of meat, is ſoon brought from the field to the table, pays no multure, ſupplies the place of a fallow, by cleanſing and pulverizing the

ground, and yields more ſuſtenance by the ac
plant we know. It has already done more,
by having the cultivation of it farther extende
to keep our people from emigrating, than
pedient, which has been hitherto deviſed.
people, and emigration will ſtop of courſe.
Stirling, of Ardoch, aſſured me, that he ha
forty bolls of potatoes, on an acre of light
had not formerly been worth a ſhilling of yea
lue the boll at 5s. only, and you have the ac
more productive of food than it was before.

Light dry dung is beſt for potatoes. Some
raiſed heavy crops, by uſing ferns, or leaves
manure; and I heard of one ſkilful farmer, wh
ſucceſsfully, in lazy beds, without any other
cept broom, chopped into ſmall cuttings a few
They thrive beſt in a light dry ſoil. Whe
wet, no return can be expected, from any
black potatoe; and where the land is firm,
able to expand themſelves in queſt of food, c
the growth. Moſſes, when they are drained,
able ſoil for potatoes, becauſe the parts are ea
and the root has plenty of room to puſh itſelf
grow to its full ſize. They are planted in
April, or the beginning of May, and are ra
ber, either with the plough or with gropes.
part, they are left in the field in pits, and cov
with ſtraw and turf.

The early froſts are very pernicious to the
indeed to all our crops, in this high latitud
being an injury, which the ingenuity of man
prevent, the kindneſs of Providence has p
medy, in which we have no hand. Whe
dews, which would blight our crops, come
latter end of September, there commonly f

morning a ſmall ſhower of rain, which corrects the baneful effects of the froſt, by promoting the circulation, and reſtoring the vegetation, of the plants.

In the reign of William the Third, when theſe mildews had very near ſtarved the nation, by ſucceſſive bad crops, the people in many places had a cuſtom of running along the corns, early in the morning, with ropes extended between two perſons, to whip off the froſty particles before they were diſſolved by the next ſun. By the time that the corns are generally filled, and the grain brought to maturity in this country, theſe ſhowers, which are correctives of the early froſt, ceaſe to fall, as no longer neceſſary for that purpoſe. We have a white and a red yam, an early potatoe, and a great variety of late potatoes, of different colours, and ſizes, and ſhapes.

12. *Turnips*, &c. Large fields of turnips, cabbages, and greens, are cultivated in different parts of this county, but more ſo in ſome places than in others.

The culture of turnips in the open fields was introduced into the weſt end of Strathearn by the late Sir Patrick Murray of Auchtertyre, about half a century ago; into the eaſt end by Mr. Oliphant, of Roſſie, about the ſame time; into Monteath by the late Mr. Drummond of Blair, and Mr. Ramſay of Ochtertyre, and even into Britain, in George the IId's time, by lord Townſend.

Where the ſoil is wet, the farmers complain that their ground is poached, by carrying them off with horſes and carts, in winter; that when the field is diſtant the labour is great, and that when the froſt is ſevere, the turnips cannot be got up. But what operation is not liable to ſome objection? If they are piled up in a corner of the field, in ſmall conical heaps, before Chriſtmas, the froſt will not prevent their being dug out; they are eaten off in ſheds, fixed, or moveable, the expence of carriage is ſaved;

and

and if hurdles are uſed in bringing them ho
needs to touch the ground.

In feeding cattle in the houſe with turnips, i
utmoſt conſequence to keep them clean. For t
the ſettles of the byre are ſometimes floored.
laid acroſs the byre, and covered with deals,
direction with the animal's body, at the diſta
an inch aſunder, to let the urine drop through
four inches from the ground.

Inſtead of raiſing turnips for a winter foo
cattle, it might perhaps be more profitable to
for a ſpring food, eſpecially in countries whe
great flocks of ſheep. Tame ſheep eat turni
and, notwithſtanding the reluctance which
ſometimes diſcover, there is no doubt but
alſo be brought to eat this food, if accuſtomed
young. At this ſeaſon, provender is often ſcar
are allowed to fall off, whereby they becom
to be unable to bring forth their lambs; wh
univerſal complaint in ſpring 1793. Or, if n
enable them to ſurvive that criſis, they have ſ
that the lambs die in hundreds for want of nou

The profit upon cattle, ſtall-fed with turnips
cauſe, when the diſtillers are working briſkl
ſupply the great towns with beef, and afford
the farmers.

If the ſheep do not ſtand in need of this ſu
to the mildneſs of the ſeaſon, or if ſheep are n
cipal ſtock of the farm, cattle, by being all
about in open fields, eating their turnips, an
in ſheds, will become much ſooner fat on ne
graſs; becauſe otherwiſe they would not eat th
with appetite, after the ſtate of the air, and
raiſing vegetation, renders them impatient to re
All animals, changing ſuddenly from dry foo

take ſome time before they can be ſeaſoned, and often become lean by ſcouring; beſides, that they can ill bear the piercing cold of ſpring nights, to which they muſt be frequently expoſed in this variable climate.

We have ſo *little rape ſeed*, and *rye*, and *hemp*, ſown, as ſcarcely to deſerve being mentioned among the crops of this county. Were it not, that on the farm of Auchtertyre, an experiment is making this very ſeaſon, whether winter rye, ſown on oat ſtubble, can be converted to the uſe of the ewes and lambs, after the ſpring turnips, elſewhere upon the farm, are conſumed; and whether this crop of winter rye can be eaten up in time to ſow turnips or rape ſeed for the ſucceeding ſpring.

A great deſideratum among farmers, where the ſtock is large, and where the graſs is either ſcarce or very ſoft and fine, is to diſcover a proper ſupply of ſpring food; and if the culture of rye, or Swediſh turnips, or rape ſeed, which bears a crop after the leaves are eaten, will be fairly tried, and found to ſupply this defect, he that brings it to perfection does ſervice to his country.

13. *Clover and rye graſs.* Red clover and rye graſs are becoming general, and from their good effects in a proper rotation, it is to be hoped, they will ere long be ſown in every part of this country. The proportions in which they are mixed, depend on the object which the farmer has in view; whether it be cut graſs for houſe feeding, or a crop of hay; and if the field is to be in paſture after the firſt year, a quantity of rib graſs, of white or yellow clover, is generally added.

When cows are to be fed with clover during ſummer, if the crop be luxuriant, and the farmer underſtand his own intereſt, he does by no means allow them to go to paſture on the field. Although it be a little more labour, he will find his account in cutting the clover, and carrying

it to the ſtraw-yard to feed his cattle. The
thus ſaved from poaching, and from hei
many places with the dung. The dunghil
year is greatly augmented, the milk will be m
and at leaſt double the number of cows mai
produce of the ſame extent of ground. Th
to have an airing every day in ſome ſmall fie
the yard, where they are fed. This practi
by the farmers about the Eaſt bridge of Earn,
parts of the country, where rural economy i
derſtood. I heard of one farmer who mai
horſes for a whole ſeaſon, upon the produce
of cut clover. Be that as it will, whoever
method of feeding his cattle with clover, will
well rewarded.

An ingenious improver told me, that ca
turnips will eat one third of their weight
hours; but others have found, that, by be
ſupplied for one day, they can eat a great de
the ſame improver ſays, that a horſe of ab
will eat eleven ſtone of green clover in the ſa

The firſt crop of ſown graſſes is commo
hay; yet a gentleman in Strathern, of ſuper
in agriculture, recommends eating up the fi
by ſheep, when rye graſs and white clover
and when it is intended that the land ſhall
conſiderable time in paſture. By this practice
from his own experience, a more abundant
ſequent years; becauſe the graſs is rendere
cloſer by the manure of the ſheep, and the
ber it can maintain.

In many places the ſeed of rye-graſs is ſa
is ſometimes thraſhed out of the cocks, bu
damage to the hay, to draw out the rye-g

ſwath, to bind it in ſheaves, and, when it is dry, to thraſh it out by itſelf.

14. *Rotation of crops.* The practice of good farmers, on ſoils of the ſame nature, is nearly ſimilar; while many others may be ſaid to have no fixed rotation at all.

The moſt ſkilful farmers in the diſtrict of Tullyallan and Culroſs on all the flat land, and moſt of the upland, from the bridge of Forteviot on both ſides of the Earn, to the Tay, and about Menſtrie, have a rotation of 6 (ſee Rotation 1ſt in the annexed table). The rotation on the clay land in Monteath, among the beſt farmers, is in 8 (ſee Rot. 2d). The common rotation on the ſame ſoil in the laſt diſtrict is in 3 (ſee Rot. 3d). The beſt rotation on the Dryfield or up-land is different. In the lands of Auchtertyre, it is in 7 upon the larger farms (ſee Rot. 4); but in ſmall farms of good old infield, the diviſions are 6, having only two years paſture (ſee Rot. 5). When the infield, and the moſt acceſſible parts of the out-fields, only have been marled, the diviſions are 5, having 1 in paſture; and the remainder of the out-fields are treated according to the old mode. The reaſon aſſigned, for having the land ſo few years in paſture, in the two laſt inſtances, is, that each diviſion receives an abundant quantity of manure, becauſe ſome paſture grounds, which are not arable, are annexed to each farm, and by theſe means, and fodder from the out-fields, a greater number of cattle is maintained than in proportion to the ſize of the arable land (ſee Rot. 6). One rotation at Lawers is in 4 (ſee Rot. 7). Another rotation at the ſame place is in 9 (ſee Rot. 8). The rotation about Drummond Caſtle is in 8 (ſee Rot. 9). On ſtrong land in Foulis Weſter, the rotation on a ſmall farm is in 7 (ſee Rot. 10). On all ſmall farms there is more houſe-dung in proportion to their extent than on farms that are large. On larger farms of the ſame kind of

ſoil, the rotation is in 8 (ſee Rot. 11). On
conſiſting of different kinds of ſoil the rotat
on the light ground (ſee Rot. 12); on ſtronge
(ſee rot. 13); and on the flood land in this i
optional to the tenant, to keep one half in whit
the other half in paſture, or the whole of it c
hay or paſture. The fodder got from the low
this farm, which requires no dung, enables t
follow a cloſer rotation on the other lands. T
at Callander is in 7 (ſee Rot 14.)

Upon the upland in Monteath the rotation
with that near Drummond Caſtle, except th
taken for the firſt crop after ley, inſtead of oa
a heavy multure. The rotation upon the ligh
tween Gaſk and Balgowan, is much the ſam
former, except that a fallow or green crop is
for the ſecond crop of oats, and barley next.
an five years in tillage, (one being a green crop
five in paſture and hay.

In the moſt of Strathallan they keep their lan
(i. e.) one third in tillage for three years, and
in graſs for ſix. By this mode of culture the
bear once in three years, or ley, unleſs they fa
field for barley the preceding autumn; and it i
that they can ever run out their land.

In ſeveral places of this county, it muſt how
knowledged with regret, that the farmers have
rotation. They plough the land as long as
any crop, and then let it out to reſt, of which
need.

TABLE OF ROTATIONS.

1.	2.	3.	4.	5.	6.
Fallow.	Wheat.	Peas and Beans.	Barley with Seeds.	Hay.	Oats.
Fallow.	Wheat.	Pea and Beans often drilled.	Barley with Seeds.	Hay.	Pasture
Beans.	Barley.	Oats.			
Oats.	Green Crop.	Bear with Seeds.	Hay.	Pasture.	Di to.
Oats.	Green Crop.	Bear with Seeds.	Hay.	Pasture.	Ditto.
Oats.	Green Crop.	Bear with Seeds.	Hay.	Pasture.	
Oats.	Turnips.	Barley with Seeds.	Hay.		
Oats.	Turnips.	Barley with Seeds.	Hay.	Oats.	Turnips.
Oats.	Oats.	Green crop.	Barley with Seeds.	Hay.	Pasture.
Oats.	Bear, and no Dung.	Green crop, with Dung.	Barley and Seeds.	Hay.	Pasture.
Oats.	Fallow, or Green Crop.	Wheat, or Oats.	Green crop, or Fallow.	Barley with Seeds.	Hay.
Oats.	Green crop.	Barley with Seeds.	Hay.	Pasture.	Ditto.
Oats.	Fallow, or Green crop.	Wheat, Oat, or Barley.	Barley with Seeds.	Hay.	Pasture.
Oats.	Green crop.	Barley with Seeds.	Hay.	Pasture.	Ditto

In ſome of theſe rotations, every perſon wh
farming, will obſerve a capital fault, viz. th
crops are taken ſucceſſively from the ſame fie
good farmer will incline to do, and whi
ought to be allowed, unleſs the land be
ſtrong.

Summer-fallowing, as might naturally be
only practiſed by the beſt farmers, where a
tion is obſerved. On ſtrong ſoils it is a p
wheat. On light land, where the ſtyle of
good, a crop of turnips or potatoes is ſubſti
moſt part, and cabbages or greens more rarel
a fallow; and in this caſe the ſucceeding c
and graſs ſeeds. The practice of both, in
opinion, is very judicious; and, as the
farming becomes more diffuſive in that part o
of which I have the honour to give an accou
perſon can doubt, from the progreſs it has
great hopes may be entertained, that the peri
diſtant, when all the ſtiff land, under the pl
fallowed *once* in ſix years, and two green cro
to the firſt rotation in the foregoing table; a
light land in tillage, ſhould be allowed *ſome yea*
to recruit its ſtrength, and in every rotation
nips or potatoes, to make it clean, as in rota
14th of the ſame table.

In many parts of Strathern and Strathalla
land is extremely light, the farmers have a pr
beginning of winter, of ribbing their land, i. e.
and leave a furrow alternately, ſo that the la
ploughed, is left exactly on the top of the fu
is not ſtirred. After this operation the field
pearance of the indented roller of a lint mill
ciple may be juſt. It is the ſame with that o
who turn up their onion and celery beds,

much ſurface as poſſible to the meliorating influence of the air. This is the winter fallow of theſe farmers. Their principal miſtake ſeems to be ribbing acroſs the ridges, and not winter-furrowing the land, except in a very few inſtances. By this neglect, the ground lies all winter under ſtagnant water, if the field be nearly horizontal; and if the declination be conſiderable, the ſtreams in the old furrows carry away the ſoil.

15. *Paſture.* It has been already obſerved, that a great proportion of this county is light ſoil. Wherever this ſoil prevails, an intelligent farmer lays down a conſiderable portion of his land in paſture, to reſt his ground, and give it ſtrength to bear good crops; and the ignorant farmer, in ſpite of his avarice, muſt let his land go to ſpontaneous graſs, when it can carry no more grain. There is alſo much waſte land, much moor, many hills both green and heathy, which are always in paſture. More than three-fourths of the whole ſurface may be computed to be in this ſtate; into which no plough has entered, ſince the beginning of time. Hence it becomes an object of the greateſt importance, to have good breeds of cattle, of every different ſpecies; and to attend to the climate, the ſoil, the food, and management, adapted to each. The full value of paſture, cannot, however, be truly eſtimated, where the ground is not incloſed, or in large ſheep walks.

16. *Implements of huſbandry.* The plough, uſed by many of the moſt knowing farmers, is that with a chain and curved mold board, generally of caſt iron. Some very intelligent improvers, about the eaſt bridge of Earn, reject the chain, but ſtrengthen the beam with a lateral bar of iron, from the muzzle down paſt the hole where the coulter goes through.

In Monteath ſome farmers make uſe of a ſ
improved Scotch plough, in preference to *Sm*
account of its lightneſs, and becauſe it does
furrow of clay land ſo much on the back. I
the round ſhare is moſtly in uſe; in land, wh
ſtones, the feathered ſhare is preferred, on acc
neatneſs of its work; and, indeed, in tough
no other ſhare will cut the roots of graſs or w
over the ſurface with equal eaſe and neatneſs.

Theſe three kinds of ploughs are drawn b
but in the greateſt part of the country, to w
count refers, the old Scotch plough, drawn
four horſes, is ſtill in uſe; and in ſome pla
barous cuſtom is not exploded, of yoking four h
and driving them by a man going backward.
appears very awkward; yet they contend, in
fence, that the horſes act with greater power,
abreaſt, than long; that the ground is in m
full of large ſtones, as not to admit the long
the driver, by having his eyes at once on t
plough, can ſtop the draught more inſtanta
ſave the *graith* better, than in any other p
that their ſmall horſes feed frequently, and ev
hill paſture, where larger horſes would ſtarve
hoped, however, that by the introduction of
which is gaining ground, their food for h
other cattle, will be more abundant, a lar
horſes employed; and two-horſe ploughs, of
ſtruction, made uſe of; and that all argumen
of four horſes yoked abreaſt will be unneceſſar

The harrows conſiſt for the moſt part of
bulls with iron teeth. Two are joined togeth
pling iron; and, in ſome inſtances, by a dou
iron, introduced into Monteath, and recom
Lord Kames.

Colonel Robertſon, of Lawers, uſes harrows of five bulls, having five teeth in every bull. The teeth do not follow one another in the ſame tract, becauſe the harrows are four inches narrower before than behind, and are drawn by a muzzle, fixed to a perpendicular iron pin. They are drawn by two horſes, are found to do more work than in the common way, and, owing to their conſtruction, are eaſier in draught.

Rollers have become very common. Moſt of them are made of ſtone, others of wood, and a few of caſt iron. The eaſe, with which a roller is drawn, depends on the length of its diameter; and therefore, although the ſtone rollers are the moſt durable, timber rollers on fillies may be made of any ſize, and are eaſier in the draught.

Machines for thraſhing corn are coming faſt into uſe. They are driven ſometimes by water, but moſtly by horſes They thraſh more or leſs, according to the weight of water, or the number of horſes employed. One has been erected laſt year at Lenrick, in the pariſh of Callander, at the expence of £20, which goes by water, and thraſhes between three and a half and four bolls in an hour, according to the quality of the corn. I ſaw it thraſh two threaves * in four minutes; the ſtraw was made perfectly clean and finely bruiſed. At the moderate calculation of 1s. the boll, the machine will pay itſelf by thraſhing 400 bolls.

Fanners for cleaning grain, have been long uſed by the moſt induſtrious of the farmers; and are to be met with, not only in every corn mill, but almoſt in every barn, where the farm is more adapted for tillage than paſture.

Kilns for drying grain are ſometimes made with timber ribs, others with brick floors, but thoſe with caſt-iron floors are coming into general uſe.

* Forty-eight ſheaves.

Two-horſe carts have gone much into di
two horſes, in ſeparate carts, will carry at l
more weight, and with greater eaſe. Whate
load is before the center of gravity, which is
axle, reſts conſtantly on the horſe yoked
Going down a hill this burden muſt be gre
and always in proportion to the ſteepneſs o
But this is not all the evil. Unleſs the line
of the foremoſt horſe be always in the line f
of his hams t the middle line of the axle,
ling down the other horſe's back, or, in oth
be giving him more weight to carry. The
nerally fixed about the pin of the teams, wh
line of the fore-horſe's draught (behind tha
derable angle above the axle. From whic
that the horſe in the traces muſt either not
muſt bring additional weight on the other
is always in proportion to the force with wh
and the largeneſs of the angle, which th
draught makes with the line betwixt the
hams, and the axle of the cart. Beſides, u
be more careful than ordinary, to keep the
his duty, the other poor animal has not
weight to carry, but all the load to draw.
plough with four horſes, the ſame reaſonin
ſubſtituting the muzzle of the plough for t
cart,) as far as the drawing is concerned :
plough with two horſes, unleſs the back r
juſted, that the theats are in a ſtraight line
of the hams to the ſwingle-tree, the better
the more weight he muſt bring on his own
farmers, indeed, ſay, that the weight of th
in ſome degree, reſt on the horſes necks, b
back-ropes. This may be a reaſon for th
ſtraight, but not for their being bent upwar

The expence of all implements of huſbandry, is ſo various, in different places of this extenſive diſtrict, according to their quality and conſtruction, that it ſeems unneceſſary to give a detail of the prices. Perſons well ſkilled in making theſe, are almoſt every where to be met with. The average price of a cart, properly conſtructed, is from £8 to £9. And of ploughs, with a chain, from £2. 2s. to £3. The farmers cart from £1. 11s. 6d. to £2. The price of a thraſhing-mill has been already mentioned.

Very few oxen are now uſed, for draught, in this part of the country. The farmers allege, that, in a critical ſeaſon, the oxen are ſo ſlow, they are obliged to prefer horſes, for the ſake of diſpatch.

3. PROPRIETORS, TENANTS, INCLOSING, VILLAGES,

1. THE proprietors are of all the different ran which diſtinguiſh from one another, perſons h perty in ſoil:

Many have independent fortunes; and ther no counties in Scotland, where the commons diſtinguiſhed for their education, their manne larged views, the love of their country, and t their property. Thoſe, who are not engaged ous departments of government, of law, or affairs, live for the moſt part upon their eſt pleaſure in embelliſhing their reſidence, and c the country around them. Not a few of them the improvements of their own tenants; and ſcending to reaſon with the country people their prejudices againſt new modes of culture them to diſcern their true intereſt, they acquir fidence and eſteem, and are regarded as the friends of every perſon within their domains. landlord, who keeps his tenants aloof, or doe them all, receives only the cold ſalute and bow which is due to rank; he who bends a li changes a few kind expreſſions, receives the re lutation of eſteem, accompanied with the affec guage of gratitude. The moſt beloved, and t ceſsful generals, were thoſe who knew their

ſonally. No man is leſs dignified for being beloved; and it leſſens no man's conſequence in the world, to have the confidence of thoſe around him. Hence the generality of proprietors, who are reſident on their eſtates, lead their tenants by the hand, in the road of improvement and of wealth; and have found the true ſecret, of promoting their own intereſt, while they promote the intereſt of their people.

2. *Rents.* The rent of all kinds of ſoil has increaſed, and is for the moſt part doubled, within theſe thirty years. This increaſe is owing, in the grain countries, to the improved ſyſtem of huſbandry, and to the uſe of lime and marl judiciouſly applied, together with the increaſed extent of farms, and the riſe of markets, by the additional population of the towns. In the graſs countries, the riſe is occaſioned by the introduction of ſheep, and ſuperior knowledge in the management of ſtock; and in all places where ground is incloſed, to the progreſſive benefit of that ſpecies of improvement, and the general wealth of the country.

I met only with one inſtance, where land would let no higher, encloſed than open. In ſome caſes, where the rotation is cloſe and the land rich, where the bottom is wet, and herding unneceſſary, all that the farmer deſires is an open drain to carry off the water, and aſcertain his march. Hedges and hedge rows would prevent the free circulation of air in harveſt, and gather vermin at all ſeaſons; and even ſtone walls would occupy the ground, without carrying away the water.

The method of augmenting rents, with leaſt inconvenience to the tenant, and with equal advantage to the landlord, is by making the riſe *progreſſive*. If the rotation be in *ſix*, the tenant may be ordained to pay a certain increaſe on the ſeventh crop, after he has gone over all his ground, and has had time to dreſs it to his own mind; ſome more

on the thirteenth crop, and ſo unprogreſſivel
of every rotation, to the end of his leaſe. I
be ſeven or eight, a little increaſe of rent m
at the end of every ſeven or eight years, duri
nuance of his leaſe. There is not only a w
ment, but a degree of cruelty, at which hum
in laying on a heavy rent at the very comme
leaſe, unleſs the farm be in high cultivation.
defeats its own end, by depriving the tenan
the only means, of either improving his farm
ing his rent, without diſtreſs.

The average of rent, in the beſt ſoils, is fr
thirty ſhillings an acre; and on ſome land in
tion, and near the market, forty ſhillings. T
light land, is from ten to twenty ſhillings, ac
local advantages; and ſome is even as low
proper allowance is made for the paſture annexe
Moors and ſheep-walks are more commonly
ſoum than by the acre, (which is a term den
dinary paſture of a full grown cow). A horſe
two ſoums, four ſheep one ſoum, and young ca
to their age. The graſs of a ſoum, in hill-g
lued at an average from 5*s.* to 7*s.* according to

All rents have been augmented; but wher
not incloſed, and improvement has made little
rents have been fluctuating, except on ſheep-w
have been more permanent where theſe cauſes
them; and the probability is, that the rents
to riſe, or at leaſt that the riſe will be more
proportion as the proprietors go on to inclo
tenants to improve the land. If, however, r
do not continue to advance, the price of mea
neceſſaries of life, muſt fall, and both graſs land
become leſs valuable.

The yearly rent of the whole diſtrict, it is impoſſible to aſcertain with any degree of accuracy, without having acceſs to the rental of every proprietor, which was not to be expected; and to gueſs at the amount at random would only have a tendency to miſlead.

3. *Tenants.* Without taking notice of ſmall poſſeſſions, which are called *pendicles*, becauſe they are ſmall portions of his land allotted by the farmer to cottagers, labourers, and ſervants, which in ſome places is ſtill the practice; the extent of what may be called farms, where one or more ploughs are yoked, is from 30 to 400 acres. The farms are greateſt, where the country is beſt improved, and where the tenants are moſt wealthy and intelligent. The farms in the mountainous part of the diſtrict are oftener reckoned by miles, than by acres; and the flocks are in proportion to their extent.

It muſt occur to every perſon, who travels through the country, and is at any pains to make obſervations, that where the farms are large, the tenantry live better, clothe better, and are more comfortable, in every reſpect, than where they are ſmall. While, at the ſame time, even the ſmall farmers themſelves have greater abundance of the comforts of life than they had ſome time ago; except in a few inſtances, where they are crowded together in hamlets, and their land in *runrig*, or where they have no leaſes, or where the rents are augmented without improving the land, and increaſing the means of paying an increaſe of rent, inſtances of all which might eaſily be given. About half a century ago, the farmer went on foot to market; now he rides, properly accoutred in all points; formerly he ate his food off his knee, and it conſiſted of meal, vegetables, or milk; now his table is covered, his knife and fork are laid down before him, to dine on meat; his father lay on a ſtraw or chaff-bed, without curtains, he ſleeps on feathers with his curtains

curtains drawn around him. Servants and la
advanced in the ſame proportion, in their deſi
ment of the comforts of life. Since they are n
ous than their fathers, why ſhould they not be
fortable? And while they are inferior to no
men, in their regard for things ſacred, in thei
deportment, in their practice of the ſocial virtu
ty to their ſovereign, ſubmiſſion to the law
love of order, long may they enjoy the well-ear
their induſtry! Long may they be the pride o
try and the terror of its foes!

4. *Farm-houſes.* The ſtyle of the farm-houſ
is greatly improved within theſe few years; a
improving. In place of the mean hovels, i
fathers lived, without light, and without air,
of ſoot and ſmoke, many of the farmers now l
ſubſtantially built with ſtone and lime, having
and a covering of blue ſlate. Such of the hou
diſtance from ſlate are covered with wheat or
and very few want glaſs windows. The mo
of the tenantry have their ſtacks built upon ſta
pillars of ſtone or wood, to keep the under ſhe
ſave their grain from vermin. The offices are a
both in reſpect of execution and ſituation, ferm
a ſquare behind the dwelling-houſe, with the
ſtraw-yard in the centre, and a foot path aro
I muſt add, with regret, that in ſeveral places t
ſtill mean; the farmer and his cattle lodge un
roof, having ſeparate entries, and a partition b
The dung is laid before the door. If the ſtr
all his houſes are thatched with fern or broom
creaſes the meanneſs of their appearance. In
heath is uſed for thatch, which, however glo

more durable covering, and in this reſpect, not inferior to any ſtraw.

5. *Leaſes.* The length of leaſes is for the moſt part nineteen or twenty-one years. On the eſtate of Perth a few are forty-one. In the neighbourhood of Tullyallan a few are thirty-ſix years. On the graſs farms in the Highlands ſome are only nine. In the leaſes, proprietors generally reſtrict their tenants to a particular method of cropping the land, ſpecifying a rotation, ſuited to the nature of the ſoil. A few of them reſtrict ſimply to have one third of the arable ground in graſs, for the three laſt years of the leaſes. Others allow only one third in tillage during the continuance of the leaſe; which in light land, and in bad climate, is a moſt ſenſible rule, eaſy to be obſerved, and conducive both to the intereſt of the landlord and tenant, becauſe, in this caſe, it is impoſſible to run out the land. All fences, given ſufficient at the farmer's entry, muſt be left at his removal in a *fenſible* condition, and the buildings in a *habitable* condition; otherwiſe, the removing tenant pays damages to the incoming one, according to the amount adjudged by the bye-lawmen of the barony. In moſt contracts of this nature, tenants are bound to perform certain carriages, and to give a certain number of fowls annually to the proprietor. On moſt of the grain farms, the rent uſed to be paid partly in money, and partly in barley or oat meals. But rents, payable wholly in money are becoming more general; which ought to be the caſe. In moſt contracts betwixt landlord and tenant, the latter is bound to pay publick burdens, by which is underſtood ſtatute labour, or a compoſition in money, the land tax, miniſters and ſchoolmaſters ſtipends, to grind their victual of a certain mill, and pay a certain multure. Some of theſe are accounted by the tenants to be grievous burdens; and the injury, which they do to the cultivation of the country, ſhall be pointed out under *obſtacles*

to improvement. Leave is reſerved to the proprie
ing quarries, mines, and minerals, and all thin
ſurface, the tenant being allowed a compenſa
damage he ſuſtains. Sometimes leave is alſo
planting trees on the ſame conditions; and
bound, neither to cut trees, nor to injure wo
cattle. When the land is to be incloſed, duri
rency of a leaſe, the ſtipulation of a certain *per c*
money to be laid out by the proprietor, in i
ſubdividing the farm, makes an article of the lea
tenant is charged with $7\frac{1}{2}$, or 6, or 5 *per cent*
expended, according to the terms of the contra
caſes, farmers pay each 5 *per cent.* for the bou
In a few leaſes the tenant incloſes his farm, in
to be directed by the proprietor, and is paid fo
according to their value at the expiration of his

6. *Incloſures.* Three fifths at leaſt of the
land is open. But where incloſures have been
ouſly, their extent is proportioned to the ſize o
and to the *relative* ſituation of the ground. Whe
ing fence is finiſhed, the ſubdiviſions, even o
farms, ſeldom exceed thirty acres; in moſt ca
about twenty. On farms of leſs extent, the in
from eight to 10 acres; and on ſome farms,
made, except a ring fence round the whole.
land is in knolls, with ſtrips of ſpouty ground be
or when the ſoil is of ſuperior quality in one
field to the reſt of it, or cut by ſmall brooks, fo
little valleys, or by any other natural boundary
fing is regulated according to theſe local circumſ

The prices are extremely various, both of the
and of the hedge and ditch. Stone walls, or wha
double dykes, prevail, where the quarries are
or ſtones are to be found in the fields, and whe

poſed ſituation or ſterility of the ſoil render the growth of thorns precarious. Hedge and ditch prevail, where the land requires draining, and the ſoil is of good quality. When the ſtones are near, and eaſily wrought, the lineal yard, four feet high, is in ſome caſes quarried, led and built for 6*d.*; but in moſt caſes, the rood of thirty-ſix ſquare ells coſts from £1 to £2 2*s.* according to the difficulty of quarrying and leading; and at all the intermediate prices, correſponding to the convenience or inconvenience of the work. A ditch of ſix feet wide at the ſurface, and of depth ſufficient to allow a proper ſlope, including thorns and paling, is executed at 13*s.* or 14*s.* the long rood *; but when the ground requires ſome pick work, and the rafters and ſlates are dear, it coſts more. When the thorns and railing are furniſhed by the proprietor, a ditch of that width is charged 1½*d. per* ell. A ditch of four feet wide at the ſurface is wrought for 1*d.* In the upland the ditch is ſometimes faced with ſtone, and a hedge placed behind; in which caſe, the labourer charges 3*d. per* ell for both. I ſaw in one place the thorns of a fence of this kind, not on the top of the fence, immediately behind the ſtone wall, where it is apt to be hurt for want of moiſture in a dry ſeaſon; but at the extremity of the ſlope, formed by the earth thrown out of the ditch, where it finds plenty of nouriſhment. In dry ſoils this practice ſeems very judicious. The late Archibald Stirling, Eſq. of Kier, introduced upon his eſtate, the practice of planting the hedge in the face of the ſtone wall, oppoſite to the ſurface of the field, in an opening of three or four inches ſquare; which ſaved the expence of weeding and railing, and are in a thriving condition. In a few places there is what is called the Surry fence, having about thirty inches of ſtone, inſtead of ſlabs and rafters, to defend the hedge and ditch.

* Six ells ſquare is the ſhort rood, thirty-ſix ells ſquare the long rood.

About gentlemen's houſes, the ſtone walls ar
built with lime. but in moſt other places, the
dry ſtone, or have only common mortar. Perſo
derſtand the building of dry ſtone properly, fi
the larger ſtones, not by means of pinnings, bu
them upon one another; and then cloſe up th
with pinnings to ornament the wall. At Glen
in ſome other high ground, the fences are f
part Galloway-dykes. About the half of the
of ſuch ſmall ſtones as have a bed, and are b
The upper part of the wall is made of ſingle ſ
in the form of an arch, every ſtone with its thin
ward, and forming a wedge between the other
largeſt ſtones are always put in the tire which
double part, and every row decreaſes towards th
wall. The upper courſe of Galloway-dykes
made as open as poſſible, to afford leaſt footin
and to let them ſee through. In many other
kingdom, the Galloway-dykes have no double
eſpecially, where the ſtones are large. Of all d
the moſt formidable to cattle. A double wall c
height will not turn ſheep with equal certainty.
be made of the coarſeſt ſtones; and when the
properly laid, having the centre of gravity alw
on the ſtone below, they ſtand better than d
unleſs theſe are cemented with lime, and hav
band ſtones.

Many of the ſtone walls and hedges have ro
Where ſhelter is the object, and the ground is
lue, theſe belts are in many caſes forty feet bro
led moſtly with common firs: where orname
ſtudied they are planted with different kinds of t
are ſeldom ſo broad. If a hedge be the fenc
ought to be at ſome diſtance from it, in order
it of its nouriſhment or air, nor to hurt it by

pulation of the towns, and of the country, at different periods, is taken down with accuracy.

Beſides publick works, there are in this diſtrict upwards of forty towns and villages, of which many have lately increaſed to an amazing degree, not only in the number of inhabitants, but in the neatneſs and taſte of the buildings. Some are almoſt entirely new. Several people, ſtill alive, remember Callander particularly, when it conſiſted of four families only, the miniſter's, ſchoolmaſter's, the beadle's, who was alſo the ſmith, and the inn-keeper's, amounting in all to about twenty ſouls. There are now at leaſt 1000 ſouls, and the number is rapidly increaſing. Comrie is nearly in the ſame predicament, beſides Crieff and others. New villages are planned, where there never were any before. Allowing that there is a decreaſe of population on the farms, the increaſed population of the towns does a great deal more than overbalance that decreaſe. The produce of the ſoil is more abundant, and land is improved, which yielded little or nothing before; and wherever you produce more food, you will find more people. No man will venture to ſay, that a farm of fifty acres in the hands of four tenants, who have each a horſe in the plough, and their ground mixed in *run-rig*, will produce the quantity of ſubſiſtence, which the ſame farm can do, in the hands of one man, who has both money and induſtry to cultivate the ground. With reſpect to population, where is the difference, whether the other three farmers live on the farm, or in an adjoining village? but with reſpect to induſtry, the difference is great; on the farm, they were three-fourths of the year idle—in the village, they are ſkilful artiſts, and able to rear their families without begging their bread.

The population is not only increaſed, and the land rendered more productive, by the eſtabliſhment of well-regulated and induſtrious villages; but labourers are at hand,

in the time of need, and artificers, of various
tions, all ready to be employed in miniſtering
ferent wants of the neighbourhood. Villages af
ready market, for whatever the farmer has to ſe
ply him with dung to improve his poſſeſſion.

When the proprietor underſtands his own ir
that of his people, he introduces manufactu
to the place, begins on a ſmall ſcale, encou
of the moſt enterprſing tradeſmen, and di
not ſo much to humour their taſte and inc
ſpeculate in any projects, as to avail themſelv
local advantages: for man has a verſatility
which will enable him to ſuit himſelf to his ſ
apply the force of his mind to whatever obje
view, and bend himſelf into any form which
By a ſucceſsful example or two, the ſpirit of
pervades the whole people, the village is ex
and the manufacture to that length, which
the place can afford. But the moment it is ex
ther, if their commodities are bulky, other pla
ford to underſell them in the market, unleſs
water-carriage.

In eſtabliſhing a village, every proprietor, o
will ſtudy the convenience of fuel and water,
gardens to raiſe pot-herbs, graſs for cows in ſu
a proviſion for winter-food. If ſtone, lime, a
be convenient and cheap, ſo much the better;
all, that the food of man be plentiful, and ne
A few of the lots of rented land ſhould be long
reſt, to enable the poſſeſſors to keep a horſe to
own, and their neighbours acres, and to per
occaſional carriages. He will find it neceſſary t
in diſcerning the characters of the ſettlers; a
miums ought to be moderate, that his feu-d
higher, otherwiſe the people will not only hav

to enable them to begin in buſineſs, but they run the riſk of getting into debt, and of ruining their circumſtances, before their houſes are finiſhed.

The increaſe of villages is owing to different cauſes; but chiefly to theſe two—the deſire, which every man has for being *independent*, and for a property he can call his own, and the *preſent* ſituation of ſociety in this country. This increaſe is, therefore, the complexion of the times, not the effect of any premeditated plan, unleſs it be the plan of Providence. In rude and tumultuous ages, mankind aſſemble in villages for mutual protection; in the agricultural ſtate, and when the law is effective, they ſpread themſelves through the country on their different farms; and, whenever the ſociety is advanced to that ſtage, in which the commercial and manufacturing ſyſtems begin to be united to that of agriculture, the diviſion of labour takes place, every man follows a diſtinct profeſſion, and men aſſemble more than at any former period; and towns and villages neceſſarily increaſe. The towns take the lead in whatever branch is the greateſt object of the times, owing to the largeneſs of their capital, their eſtabliſhment into corporations, and their being ſituated near to water-carriage. The villages in their vicinity follow their example, and become towns. The ſpirit of enterpriſe diffuſeth itſelf. The remoter villages begin to be induſtrious, and to increaſe in like manner. All is in motion: no man is willing to be behind his neighbour in the road of induſtry, of wealth, and independence: like an apiary, the buzz of induſtry is heard on all hands, where every bee is employed in collecting his ſhare of honey to enrich the hive; and the huſbandman rears the plants from which they derive their food.

It is acknowledged, that a watchful eye ought to be kept over villages, no leſs than all other collections of men; and that the reins of government ought to be held by a

ſteady hand. The ſuperior ought, therefore, t
ſome checks to himſelf, at leaſt until the comm
rive at that degree of intelligence, integrity, a
which may enable it to ſecure its own proſperity
gulate its own internal police. Weeds will neceſſ
in an uncultivated field, to injure and annoy th
part of the crop. But if the good of the whole
merit only rewarded, and impartiality pervades t
of government, mutual confidence betwixt lan
villagers will take deep root; and Induſtry, ch
Benevolence, will produce the happy fruits of
and affluence.

Well-regulated and thriving villages are to h
this nation, the nurſeries of ſeamen and ſoldie
may be leſs robuſt than the peaſantry; but the
tainly more *hardy* than the deformed, ſpawn,
ſweepings of great towns. It muſt be evident,
the inſalubrity of crowded cities, and the h
which fall to the ſhare of the lower claſſes, they
nor never can, ſupport even their own populati
out freſh recruits from the country; whereas v
moderate extent, have as good air, and as goo
as the people around them.

4. SPECIES OF LIVE STOCK.

Sheep and cows conſtitute the principal live ſtock of this country. Horſes are employed in the various operations of the farm; ſome of theſe are reared, but many are bought in. The horſes of the low parts of the county are larger, and more powerful, than thoſe in the higher grounds; yet the latter, when properly fed, have more ſpirit than the former, and can endure more fatigue. There are few ſwine, except about diſtilleries. Domeſtic fowls, of various kinds, are neither very plentiful, nor very ſcarce.

1. *Sheep and Goats.* Goats are ſuch hardy animals, and their milk ſo nutritive, that at one period they were very much reared over all the Highlands of Scotland: but ever ſince the landed proprietors began to pay attention to their woods, as an object of profit, the goats have very much decreaſed in number, becauſe they deſtroy the woods by peeling off the bark; and, ſince ſheep ſtocks began to prevail, they have almoſt diſappeared entirely in this part of the kingdom.

The ancient breed of ſheep, in this country, were the white-faced. They were few in number, and, in the Highlands, were houſed in cots, every night in Winter and Spring.

About twenty-five or thirty years ago, the black-faced breed was introduced from the South, and brought in either in lambs or at a year old. Their numbers have increaſed,

beyond all expectation, ſince that time, over all the highlands of Scotland; inſomuch, that perſons who attend not to the cauſe, are aſtoniſhed that black cattle have not totally diſappeared, or at leaſt decreaſed in the ſame degree. The fact is, whatever be the cauſe, that our markets of cattle in the autumn and ſpring, are as crowded as ever.

This may be owing to the preſent management of ſheep ſtocks. They get very little provender in the winter ſeaſon, whereas, by the old ſyſtem, they were as regularly fed in the houſe as the other animals, of which the farmer was poſſeſſed. The whole of his hay and ſtraw is now reſerved for his cows and horſes; which enables him to keep nearly as many as before; and if ſome of his higher fields are in graſs, and his tillage leſs extenſive, he has fewer work-horſes to maintain, and the fields, which he ploughs, yield more abundant crops. He keeps alſo fewer hill-horſes. His moors are better preſerved; and his ſtock more adequate to the ſize of his farm. We may alſo take into the account the improvement occaſioned by the ſheep themſelves. They enrich the quality and enlarge the quantity of graſs within their walk, more than any other ſpecies of browſing animals. They never deteriorate the ſoil; they render it always more productive; and wherever their numbers are increaſed, they help to ſupport the increaſe of their own numbers, by producing an increaſe of food. The ground is not only made green, and the heath extirpated, by the enriching quality of their manure, but the fineſt graſſes ſpring up ſpontaneouſly, where it had formerly been ſcanty and coarſe; and there is little doubt, that in a few generations, the Grampians will be as verdant as the Ochills; and that the Ochills had once as forbidding an aſpect as the Grampians. A great proportion of the pariſhes of Aberfoil, of Callander, of Balquhidder, and Comrie, beſides a conſiderable extent of the pariſhes of Muthill, Monzie, Monivaird, and the Port of Mon-

teath, and the whole north ſide of the Ochills, from the junction of Earn and Tay to Dunblane, are clad with flocks of ſheep. The whole falls within the bounds of this ſurvey; and although it would be an unpardonable neglect, to paſs this ſubject in ſilence, yet a full inveſtigation of it, is left, without reluctance, in the hands of the ſociety for the improvement of Britiſh wool.

In the whole Ochills there are computed 50,000 ſheep; therefore we may take 25,000 for the number on the north ſide, including Glendivon, which falls within the county of Perth. Some of the large farms in that tract contain ſeventy or eighty ſcore. The ſheep-maſters rear more of their own lambs than formerly. They keep no other graſs for their flocks in winter, than the ſcanty gleanings which remain of their ſummer paſture; by which means, many of their ſheep periſh in ſevere ſeaſons. They have the practice of ſmearing their ſheep. Since the breeding became more general, the ſale of full-grown mutton is leſs. Good wedders, eating their fifth graſs, are ſaid to ſell ſometimes at eighteen ſhillings, and weigh from fifty to ſixty pounds the carcaſe. The increaſed demand has induced the farmers to keep fewer cows and horſes, and more ſheep. The wool is of a good quality. The white fells from 10*s.* to 12*s.* 6*d.* and the ſmeared wool at 5*s.* 6*d.* or 6*s.* *per* ſtone, of 16lb. The ſheep are generally waſhed in ſome clear ſtream or pool before they are ſhorn.

Mr. Haldane, of Gleneagles, who very obligingly communicated to me, all this information relative to the ſheep of the Ochills, has, within theſe three years, brought to that place, ſixteen of the fineſt rams, Spaniſh, Cheviot, South-down, Ryland, and other breeds, whoſe wool ſells at 20*s.* inſtead of 10*s.* the current price of the common breed; and although he has had ten ſcore of country ewes covered gratis by them, in order to ſpread the breed, yet a fear, leſt they ſhould not thrive in that climate and

management, deters the ſtore-maſters from m
trial.

While ſo much of the yearly income, of th
of this country, depends on ſheep, every thin
be done, that is poſſible, to render them a ſtoc
valuable. We have as good reaſons for improv
ſent breed, as our countrymen ſome years ago
proving the breed, that was in the country at
and, as their views carried them no farther thar
the carcaſe, why may not we try to increaſe th
the wool?

This object can only be attained, either by
preſent breed entirely, or by *improving* it by
rams, whoſe wool is finer, while their ſize is e
ſheep we have. The laſt ſeems to be the ſafeſt
and there appears to be no objection, but one
ſucceſs.

If the rams are from a warmer climate, there
that they may not agree with ours; for man a
the creatures that inhabit this globe, can endu
verſity of climate, and has a conſtitution that
modate itſelf to every latitude, where anim
exiſt.

The nearer the temperature of that climate,
the ſpecies of ſheep ought to be brought, is to
country, the higher is the probability of their
The climate of Spain is ſo warm, that the cor
Spaniſh ſheep may not, for a tract of years,
bear, without injury, the climate of Scotland
we yet arrived at the attention beſtowed on the
of Spain, having one reſidence, and one c
ſheep in ſummer, and another in winter, and
at both ſeaſons. We might ſurely have, an
have, changes of graſs; and we might impro
mate, by means which are alſo in our power.

A queſtion has been ſtarted, whether the qualities of ſheep depend on the breed, or the paſture, or the climate.

Without entering formally into the diſcuſſion of this point, what ſeems to be neareſt the truth, is, that the qualities of animals are effected by all theſe cauſes; by ſome of them more than by others; and that ſome of theſe are effects of one another. There is no doubt, that in ordinary paſtures, fine graſs makes the fatteſt ſheep, coarſe graſs the hardieſt, and dry paſture the fineſt-wooled; and there is as little doubt, that the climate, and other local circumſtances, determine the paſture. In all caſes, your ſucceſs is greater when you aid nature than when you violate her laws:

Tu nihil invitâ dices *faciſve* Minervâ. HOR.

A breed, that makes the leaſt change from the circumſtances, in which it had been formerly placed, has a far better chance of thriving, than a breed which makes a great change. If theſe circumſtances are attended to, if the neceſſities of the animal are ſupplied, if his warmth and his food be nearly the ſame as before, his conſtitution will ſoon be accommodated to his new reſidence. But if you do nothing for him, to make him as comfortable as he was formerly, depend upon it, he will not thrive. Meliorate your accommodation, and nature will mould the conſtitution of the animal to your wiſh.

There is one part of the economy of nature, in favour of introducing into this country, a better-woolled breed of ſheep. All animals in a cold climate are, clothed with a finer fur, than thoſe nearer the equator. Wool is the fur of this ſpecies, and we are not at liberty to ſuppoſe, that nature intended ſheep ſhould be an exception from that general law. A few trials may perhaps fail, owing to a variety of accidents, but perſeverance muſt finally ſucceed. The change however ought to be gradual. It ought not

to be extreme; it ought to be cautiouſly go
croſſing the indigenous breed with other rams;
all, it ought to be made after providing for th
troduced, as nearly as poſſible, the conveni
they had in their native country. This depends
on rendering the country warmer in winter, by
waſtes in ſheep-walks, and by providing win
them, which they may eat comfortably and ple
der the cover of that ſhelter.

There follows, a ſtatement of three *actual*
within this diſtrict, given to me by perſons
from their own knowledge, aſcertaining the
each, and ſhewing the comparative gain of a *br*
which conſiſts of ewes and lambs, of a *wedde*
ſtormy ſituation, and of *ewes, ſeven years old,*
man's parks, which are changed every year.

The perſon, who gave me the two firſt it
that the white wool has fallen 2*s.* the ſtone,
wool 1*s.* 6*d.* wedders 2*s.* a head, ewes and la
lambs 9*d.* within theſe two years; which I ha
is the truth. This circumſtance explains th
which may appear in the prices here given,
they were ſome years ago; and ſhews that ſhee
not ſo productive as they were.

BREEDING STOCK.

FARM Dr.	£.	s.	d.
- - -	140	0	0
llowing ſtock - -	46	3	4¾
h ewes, at 12s. £768			
ewes at 8s. 48			
s, at 7s. 6d. 75			
s, at 12s. 32 8s.			
Ewe lambs			
Lamb tups at 4d. -	5	15	4
Rams			
ſſiſtant, and ſheep-ſhearing	22	8	0
- -	0	12	0
Expence	214	18	9¼
Profit	68	0	3¼
	£282	19	0

CONTRA Cr.	£.	s.	d.
By 128 ſhots of lambs at 2s. each (21 to the ſcore) - -	12	3	9½
800 tops of ditto at 4s. (21 to ditto)	163	16	2¼
40 dry ewes at 8s. each - -	16	0	0
18 rams at 10s. ditto - -	9	0	0
100 ſlack ewes at 5s. 6d. (21 to the ſcore)	26	3	9½
156 ſtone of white wool at 5s. per ſtone (21 ſtone to the ſcore) -	37	2	10½
40 ſtone of ſmeared ditto (ditto) at 4s.	7	12	4½
50 found of 64 lambs which died in winter - -	5	0	0
48 ditto of 60 gimmers ditto -	6	0	0
Produce	282	19	0
	£282	19	0

WEDDER STOCK.

ARM Dr.	£.	s.	d.
- -	140	0	0
following ſtock -	42	3	10¾
old at 7s. £.192 10s.			
ditto ditto 9s. 238 10			
s ditto ditto 11s. 284 18			
ught in at Lam-			
o keep up the			
at 4s. (21 to the			
- - 128 0			
gs at 4d. - -	11	4	0
ſſiſtant, and ſheep-ſhearing	22	8	0
- - -	0	12	0
Expence	216	7	10¼
Profit	158	13	0¾
	£375	0	11¼

CONTRA Cr.	£.	s.	d.
By 510 three year olds at 12s. (21 to the ſcore) - - -	291	8	6¾
82 ſtone ſmeared wool at 4s. (21 ſtone to ditto) - -	15	12	4½
156 ſtone white ditto at 7s. (ditto to ditto) - - -	52	0	0
100 found of 122 lambs which died in winter - - -	10	0	0
30 found of 40 one year olds, two year ditto, and three year ditto, ditto - - -	6	0	0
Produce	375	0	11¼
	£375	0	11¼

FLYING STOCK.

FARM Dr.				CONTRA			
		£.	s.	d.		£.	s.	d.
To rent - - -		200	0	0	By 550 ewes and lambs, ſold at Lamm			
Intereſt of the following ſtock for 9 Mns.		7	17	6	at 18s. - -			
* 600 ewes at 7l. £210. -		210	0	0	30 dry ewes at 12s. -			
A ſhepherd - -		11	4	0	15 found of 20 ewes which died			
					winter - -			
Expences		429	1	6	75 ſtone of wool, at 8s. *per* ſtone (			
Profit		104	14	11	to the ſcore) - -			
								Produce
	£	533	16	5				

Sheep are delicate animals, ſubject to a v
eaſes and other caſualties. In wet ſoils, ſor
off by the *rot*, which is a conſumption, att
dropſy, and hitherto incurable. Others are at
external *hydrocephalus*, which is a collection
the head, betwixt the dura and the pia mater,
creatures always attended with a vertigo.
afflicted with a *trembling*, or weakneſs in the
which there is no cure; and ſometimes wi
which is removed by opening the vein below
making ſome drops of blood fall into it, by
creature's head in an inverted poſition. Aft
tion, the white ſcales on the eye are rem
ſight completely reſtored. But the *braxy*, w
be of the nature of a *gaſtrilis*, is not only the

*. Sometimes the half of the ſheep is bought in in Spring, the graſs to riſe.

their diſeaſes, but has hitherto very much baffled all the ſkill and art of man.

Some farms are more liable to this diſeaſe in ſheep than others; and it was altogether unknown in the Highlands, until they began to introduce a new breed, and to leave their ſheep, at all ſeaſons, in the fields. A change of graſs, eſpecially to clean graſs, or clover foggage, has often been tried ſucceſsfully. The only remedy ſeems to be, to try to prevent a diſeaſe, which has, in all inſtances, hitherto been found incurable.

The braxy is always moſt fatal within the region of the hoar froſt, while it makes leſs havock, and is ſcarcely felt, in ſituations which are more elevated, and more remote from the tracts of rivers, marſhes, or large bodies of freſh water. As an antidote againſt this diſtemper, the ſheep are ſometimes chaced with dogs, and not allowed to remain long at once, without being diſturbed; for, whenever a ſheep ſtops, after being annoyed, he paſſes water; and as the bladder is generally burſt of ſuch ſheep as die of the braxy, a part at leaſt of the complaint may be a ſtoppage in the urinary paſſage. It is well known, that ſheep drink very little, and are of a very dry conſtitution, which may be a part of the economy of nature, with reſpect to theſe creatures, from ſome narrowneſs or other conſtruction in the canal, by which the liquid part of their food is diſcharged; and therefore, when the animal is forced by hunger to eat hoar-froſt, which is water, only in a congealed ſtate, the quantity of liquid in its bowels may be fatal.

The hoar-froſt of winter is nothing elſe but the dew of ſummer. The dew is partly the aſcending exhalations at ſunſet, and may be partly the perſpiration of plants, after the ſun is gone. Theſe exhalations, in the beginning of winter, when the influence of the ſun is weak, are condenſed into drawling clouds of white fog, which creep along the valleys in the evenings; and during the ſucceed-

ing night, this drizzling vapour of congealed d
its own gravity to the earth, and compoſes the
particles, which we ſee on the graſs and trees.
of fluidity prevents them from running togeth
maſs, and preſerves on the graſs the very ſh
in which they fell; whereas, the fluid particles
mer's dew, eaſily unite, after coming into contac
ſtitute, by their fluidity, ſuch globules, as th
attraction is able to produce.

Did my limits allow, it might be of ſome im
inveſtigate the cauſe, why lambs are more fre
tacked by this diſtemper, than full-grown ſheep.
on the ſame paſture, have the ſame care of the ſh
ſame viciſſitudes of weather, and every other thi
mon. The delicacy of lambs, or the inferiori
ſtrength, cannot account for this matter. In
ſtrength does not always imply inferiority of co
and the young of many animals are able to end
hardſhips, and ſometimes greater, than their da
we not venture to ſuppoſe, that the inſtinct of
in ſome caſes, aſſiſted by experience. Lambs, w
ſaw hoar-froſt in their lives before the beginni
firſt winter, have no experience of its effects
health; nor has their conſtitution acquired
which might make it in ſome degree harmleſs
cows, in the ſame manner, which are not accu
browſe among wood, whenever they are brought
land farm, or feed on certain graſſes, of which th
been accuſtomed to eat, become often diſeaſe
ſometimes killed; while the cows, in the ſame
have been accuſtomed to this food, ſuffer no inco
Cows, accuſtomed to red clover, are ſeldom h
which is ſurely a leſſon of experience, or the ef
bit. And, notwithſtanding the virulent poiſon
in yew leaves, (which are ſaid to be fatal only wh

and found lying on the ground), perhaps it might be poſſible to bring cattle by cuſtom to uſe them, in a certain degree, without danger. I am told that an iſland in Lochlomond, where yew trees abound, has cows frequently upon it. Have not ſome of our moſt ſovereign drugs ſome ingredients, that are poiſonous in them? And is not the human conſtitution, by being accuſtomed to laudanum, and other vegetable and mineral ſubſtances, brought to take them, not only with ſafety, but with benefit, in ſuch quantities, as without the aid of habit would produce immediate death.

In bleak and ſtormy ſituations, where there is alternate froſt and thaw, in quick ſucceſſion; where the ground is wet, and the exhalations, which compoſe the hoar-froſt, abound; where the paſture is poor and ſcanty, being only the rejected gleanings of the ſummer food, and where the natural ſituation of the ground affords no ſhelter, *there* ought ſhelter to be provided by the induſtry of man, either by erecting ſheds or cots, or by making plantations, in convenient places, to which theſe uſeful animals may reſort, in the hour of danger; and if clean graſs were ſaved, or other food provided for them, many of their diſeaſes would be prevented: and by more ample returns, they would fully repay the whole expence. Let it never be forgotten, that the *braxy* was unknown, and other diſeaſes leſs frequent, in the Highlands of Scotland, while the ſheep continued to be houſed in cots over-night, during the ſeaſon, in which they now periſh. It ſeems therefore probable, that until we ſubſtitute ſomething in place of theſe, our ſheep ſhall be liable to their preſent caſualties. It is alſo probable, that the ſuperior quality of the ancient Scottiſh wool, which is ſo much celebrated, and of whoſe fineneſs there are ſuch ample proofs, was in a great meaſure owing, not perhaps to the breed at its firſt introduction, but to the uſe of theſe cots: and it is alſo probable that a

new breed, or at leaſt another croſſing the bree
may, by proper food and management, thrive ar

This ſubject ſhall be concluded, by ſome rem
management of ſheep ſtocks in the pariſhes in
pians, already mentioned, to which this ſurvey
number of ſheep in theſe, beſides what are in g
incloſures, may be computed at between eighty
thouſand. The ewes are allowed to remain fo
part on the low paſture in the valleys, where
plenty of ſhelter and food, until the lambs are
towards the latter end of July. At this time
moved to the mountains, and the low groun
for their winter food. About the beginning o
the ſtore-maſters ſmear their lambs; and, if the
favourable, they continue the work, without in
till all the ſheep they intend be ſmeared. In
they ſmear only the weaker ſheep; in other
whole. The compoſition now in uſe is tar
Some take ten Scotch pints of tar to a ſtone
others only five pints of tar to that quantity of b
others in the various proportions between the
This ſuffices for laying fifty-five or ſixty ſheep,
of from 3*d.* to 4*d.* each, according as there is m
tar in the mixture. Formerly they uſed tobacc
ſoap, and in ſome caſes chamber-lee; but the
aſide as leſs efficacious. One man ſmears twenty
four in a day, leaving about an inch betwixt
of the wool. The benefit they expect from th
is to make the ſheep hardier and warmer, to
from vermin and cutaneous diſtempers, and
their loſing the wool. They contend farther
wool pays very nearly the whole expence; the f
ber of fleeces of ſmeared and white wool bringin
ſum in the market, becauſe what the ſmeared
in quality it has in weight. They contend alſ

more butter there is in the compoſition the wool is the finer; and that by the practice of ſmearing in general, the young ſheep are raiſed in the bone, are preferred in the market, and bring a better price. Lambs are ſold from 4*s.* to 5*s.* Wedders of two years old fetch 10*s.* 6*d.* and of three years old, 14*s.* For a year or two paſt, they have fallen a little in the price. The graſs of a ſheep, as the lands are now let, is valued at two or three ſhillings. When the ſnow is falling, or blown by a ſtorm, the ſhepherds drive them, without intermiſſion, round the top of a hill in a circle, to keep them from lowering and being ſmothered. The practice in ſome other counties is to erect circular folds on the tops of low hills for this purpoſe. When the heath is all covered, they ſometimes harrow the ſnow to bring up the heath; in which caſe the harrows ought to have long teeth and be few in number. Others throw hay in hand-fulls upon the ſnow to feed them; but a proviſion ſuited to the various neceſſities of theſe uſeful animals in winter, and adapted to the climate of North Britain, is ſtill very much wanting.

2. *Cows.* The cows are in general of a bad breed; not ſo well haired or ſhaped as the North Argyle breed, nor giving ſo much milk as the ſouthern breeds. In the lower parts of Strathearn, and in ſome other places, where plenty of clover and turnips are cultivated, the cows are left in ſummer upon cut clover, without allowing them to paſture upon it. The ſuperior advantages of this practice, have been already taken notice of. In the vicinity of Perth and bridge of Earn, the farmers are introducing the Angus and Fife breeds. In the Weſt, they prefer the Argyleſhire breed; and in ſome places of that diſtrict, the breed from Ayrſhire; becauſe theſe cows have much of the ſhape and pile of the Highland cows, and a conſiderable quantity of milk. The farmers in Monteath, who are deſirous of improving

proving the breed of their cattle, introduce ſome c
the vicinity of Glaſgow. Mr. Graham of Balg
lately brought ſome cows and bulls, of different a
the county of Devon. The cows are ſaid to exc
quality of their milk, and their meat to have as f
vour as any beef, the Highland not excepted.
handſomely ſhaped, only that their legs ſeem to
long; and are all of an uniform dark-bay colour,
a ſpot or pile of other hair, and their horns finel

The more the ſoil is cultivated, and a better
agriculture practiſed, the more will the country b
of ſupporting a better breed of cattle, and the m
will the tenantry be to improve the preſent ſtock.
moorland parts of the county, the attention of th
is moſtly confined to his ſtock, and in the diſt
adapted for grain, the raiſing of the moſt valuabl
the ſureſt way of making the greateſt returns.
farms, which conſiſt of an hundred acres or mo
ble land, there are only a few cows to give mi
family. In other places farms of fifty or ſixty
tillage, have ten or twelve cows, and ſometim
The beſt kind of milch cows, give from ten to twel
pints a day; and an inferiour kind gives only fr
eight; and Highland cows ſometimes leſs. In the
parts, where the ſoil is light, and muſt be reſted,
produce of the dairy an object of importance; v
paſture for cattle, by means of ſown graſs, will
abundant and rich, there is no doubt but a better
cows, in reſpect of the quantity and quality of t
the weight of the carcaſe, and the eaſe of fatteni
will become daily a matter of more importance.

The farmers themſelves are very ſenſible of this
ſtance, and eager for the moſt part for a better bre

DETAIL OF AN ARABLE FARM IN MONTEATH.

94 Acres of carſe ground
46½ Dry field, ditto
} Rent £ 210.

res -	15	2
- -	23	2
- -	9	2
- -	21	2
- -	17	3
- -	25	2
- -	27	0
	140	2
Beſides	15	2

lantations, pendi-
l ſervants, labour-
nen.

- - 8
- 32

nures.
oo carts of dung.
alders lime.

l goes by water.

SERVANTS ON THE FARM.

	£.	s.
1 Ploughman maintained in the houſe - - -	9	0
2 Ditto, and a barn-man; wages of each - -	7	0

Together with livery-meal, a cow's graſs, houſe, and garden free.

1ſt. boy, 2d. boy } each a pair of ſhoes - - -	5	0
	3	0
2 Servant-maids each one pair of ſhoes, and day-labourer at 8d. *per* day when employed. - - -	3	10

Cow's graſs, houſe and garden free.

STOCK ON THE FARM.

Cart and plough horſes - - - - -
Riding ditto - - - - - -
Colts - - - - - -
Milch cows - - - - - -
Young cattle - - - - -
Highland beaſts bought in occaſionally, and ſold in Spring.

DETAIL OF A FARM WITH A MIXED STOCK.

4	Milch cows	36	Bulls -	1	Sheep -	1200	Hogs, or year
32	Young cattle	40	Horſes - -	8	Gimmers	240	old ſheep

Oats ſown -	Bolls	20	Potatoes planted -	Bolls	8 0 0
Bear ditto - -	ditto	6	Lint ſown - -		0 0 4

There is one circumſtance, on the ſubject of all new breeds, which muſt not be paſt in ſile no farmer can neglect it, without certain loſs. of paſture is fitted to raiſe animals to a certain a larger ſize is brought in, than the quality is calculated to ſupport, the animals, whet horſes, or ſheep, or any other kind, will dege and never prove uſeful, until they come d ſtandard or ſize adapted to their circumſtance to their food. On the other hand, when a ordinary breed is brought in, they continue bulk, until they come up to the pitch ſuited riſhment; but there is this remarkable differ theſe two progreſſions, that in the retrograde pr takes place, when animals are brought from and a comfortable ſituation, to the reverſe, th worſe than the indigenous breed; whereas which are brought from worſe to better, cor prove, till they arrive at that perfection, whi in their circumſtances is calculated to produce for this reaſon, a much ſafer experiment, who from worſe to better, than he, who bring better to worſe. Highland cattle riſe to a grea keeping in South Britain, and in rich paſture

The improvement of the ſoil ought to hand in hand with the introduction of a la cows; and a large breed ought, for the ſame introduced, in proportion as the ſtyle of agri proved.

5. PRICES OF LABOUR, GRAIN, &c.

THERE is more uniformity in the prices of every article, than one could expect in a diſtrict, of country ſo extenſive.

1. *Servants.* Servants of every deſcription, and all labourers and artiſts, charge higher in Monteath than in Strathern; which is probably owing, both to the cotton ſpinning mill at the bridge of Teath, where ſeven hundred hands uſed to be employed, and to the drain, which has taken place from the former, to the manufacturing towns and villages on the Clyde, which has not ſo much affected the latter.

A man ſervant, who is maſter of all the operations in farming, is engaged for twelve months, from £7 to £10. If he is not maintained in the farmer's family, he gets ſix and a half bolls of livery meal, a houſe and garden, and a cow's graſs, rent free, or an equivalent to the cow's graſs in money. A maid ſervant's wages, for the ſome ſpace of time, are from £2. 10*s.* to £4, according to their expertneſs. Common labourers from 10*d.* to 1*s.* a day; and artificers, in proportion to the nicety of their art. But in the neighbourhood of public works, theſe charges are much higher. The hours of labour, in ſummer, are from ſix to ſix, allowing an hour for breakfaſt and another for dinner; and in winter, from the dawn till the light fails at night, with an allowance of one hour for reſt. Houſehold ſervants are not ſo exact as to hours; in ſummer they continue to work after ſix at night; and in winter they get

out of bed before day light, where there i
to thraſh. But in many of the large arable farn
machines have been erected; and they are
ſaving of labour, that more are ſet up every
ferent parts of the county. They are driven i
by horſes, and in ſome by water, and are of v
according to their conſtruction. The price o
one has already been taken notice of.

2. *Prices of grain.* The average prices in S
of wheat 21*s.* the boll; of peaſe 12*s.* both
meaſure. The price of oatmeal 15*s.* the bo
eight ſtones Dutch; of barley 15*s.* and of o
lithgow meaſure. In Monteath theſe grai
or two ſhillings the boll more, owing to the
the manufacturing and crowded towns alon
and a ſhorter carriage thither, beſides that th
lot is three lippies in the boll larger than the
ſure. This large firlot has continued to be
in Monteath, ever ſince the court reſided at St
the forfeiture of the duke of Albany, and th
of his lands to the Crown, where his ſtewar
jected to ſupply the court in grain. The mea
weight over all the county.

IARS OF THE COUNTY OF PERTH,

FROM 1780 TO 1792, INCLUSIVE.

ıcted from the authentic Records by (ſigned) JAMES PATON.

Wheat.				Bear.				Oats.				Peaſe.		Rye.		Meal.			
ſort		2 ditto		1 ſort		2 ditto		1 ſort		2 ditto						Byweight		Meaſu	
s.		£.	s.	£.	s.	£.	s.	£.	s.	£.	s.	£.	s.	£.	s.	£.	s.	£.	s.
—		11	8	6	18	6	6	6	6	5	14	6	—	6	—	8	—	8	1
—		11	2	6	18	6	6	6	18	6	—	6	—	6	—	7	10	7	—
14		13	4	11	14	10	16	8	2	7	4	11	8	11	—	11	4	12	—
—		11	2	10	4	9	—	9	—	7	16	8	8	8	2	9	12	10	—
6		10	16	9	12	8	8	7	16	6	12	7	10	7	16	8	16	9	
3		11	2	9	—	8	—	7	4	6	—	6	12	6	12	8	8	9	—
14		11	2	9	6	8	8	8	5	7	1	8	8	8	8	9	3	9	
12		11	14	8	8	7	10	7	16	6	13	6	12	7	16	8	8	8	1
18		12	—	7	4	6	—	6	9	5	8	5	8	5	8	6	13	6	1
8		12	12	9	12	8	8	8	2	6	6	7	4	7	4	8	8	8	1
13		12	15	9	—	8	—	7	16	6	9	7	4	7	4	8	16	9	
12		11	14	10	12	9	8	8	8	7	4	7	10	7	10	9	—	9	
12		11	14	11	8	10	13	7	16	6	6	9	—	9	—	10	8	10	1

ırs of this county are ſettled annually, in the ner, as in other counties, by a jury of gentlemen s. In this table they are underſtood to be the rices, *per* chalder, of the crops and grains, to y refer; and as many contracts are entered into, victual ſold, with reference to the fiars, Mr. Pa- ſo obliging as to ſend me an extract of them for of Perth.

s of Meat, &c. The price of beef and mutton is n a par, in all parts of this diſtrict; being from and ſometimes 5*d.* the lb. Dutch weight, accord- quality or ſcarcity at different ſeaſons. The price s from 10*s.* 6*d.* to 12*s.* and ſome 13*s.* and 14*d.* the d of cheeſe, from 5*s.* to 6*s.* both ſold by tron 22 ounces to a lb.

6. ROADS, MANUFACTURES, CLIMATE, &c.

1. *THE ſtate of the Roads* in different parts o depends on various cauſes. Whenever the g active, and materials at hand, the roads are to A turnpike road betwixt Perth and Crieff is ne Another road between Stirling and Crieff is but until theſe roads are completed, and wound up, it is impoſſible to aſcertain the an toll, which will be neceſſary on each, in orde road in repair, and pay the intereſt of the mon There is another toll-road projected from the b ling to Culroſs, along the ſide of the Forth; certainty of collecting toll, ſufficient to defray expences, has hitherto retarded any ſteps be carry it into execution.

Before wheel-carriages were ſo much in uſe, tion was paid to roads, and little diſcernment their direction, both in this country and elſe idea ſtruck all the engineers, even thoſe emp ducting the military roads in North Britain (t paſs through this country, where certainly i been intended to convey ordnance, and othe riages). "That a ſtraight line is always the tween two points, and, therefore, the moſt elig for a road." But this opinion is not well ſtraight line is indeed the ſhorteſt on a plane conical hill, it is longer than a circuitous line

hill, which forms a hemiſphere, it is exactly of the ſame length with a line round the half of the baſe: but although a ſtraight line were the ſhorteſt, the ſteepneſs of the aſcent makes it often the leaſt eligible for a road. Many other circumſtances, beſides the diſtance, ought to be taken into conſideration: the convenience of materials, the time required in travelling, the avoiding ſtoney or ſoft ground, and a variety of other obſtructions, which may increaſe the firſt expence of a road, and render it inconvenient, or endanger its ſufficiency after it is made.

When theſe two roads to Crieff are finiſhed, the commiſſioners for roads will no doubt apply the ſtatute labour to the other roads; many of which ſtand much in need of repairs, eſpecially that between the bridge of Dollary and Perth, which ſerves a great tract of country; that through Glendevan to Blairingone, which is a coal-road to a great part of Strathern; that through Glenlighorn to Comrie, which will ſhorten their carriage of coals, about one-third, to all the people in the pariſh of Comrie and others, and enable them to improve their land by means of the limeſtone, which is carried down Lochern. The road between Callander and Comrie, ought to claim ſome of the public attention, as it opens a communication between two populous countries, and alſo that between Callander and Thornhill, for the ſame reaſon.

In Monteath, the great roads are in better order; that from Stirling to Fortwilliam has been greatly repaired of late years; that from the Dup-bridge to the head of Monteath has been judiciouſly planned from that bridge weſtward, as far as the repairs have advanced; but the ſcarcity of good metal makes it ſtill deep, in many places, during the wet ſeaſon. Beyond the limits of theſe repairs, it is not good, and always worſe as it advances weſtward to Lochlomond. The by-roads are only indifferent; but in a progreſſive ſtate of improvement.

2. *Trade*

2. *Trade and manufactures.* Kincardine, in Tullyallan, and Culroſs, are the only towns be ſaid to have any trade. To the port of Ki long ſeventy-ſix veſſels, which, at an averag puted between eighty-five and ninety tons. theſe are employed in carrying coals to Lond cities on the ſhore of the Baltic; and return lad and wood to Leith and Sea-lock. In winter coals to Dundee, Perth, and the towns on the There are commonly three or four veſſels on th time. At Culroſs and Torryburn together, th eight or ten veſſels employed in the ſame trad dine has two tambour-ſchools, and Culroſs one which about fifty girls are employed. Ther looms in the towns, employed in the cotton working napery for the warehouſes at Dunferm are in that neighbourhood four diſtillers (the onl in this diſtrict). One of them is ſilent; thi conſume between eighty-five and ninety bolls o feed about three hundred and twenty oxen, ir ſpring, and employ about ſixty or ſeventy men.

At Crieff, leather is tanned, and coarſer pa a conſiderable amount. There is alſo a tambo a ſmall ſcale, and a linen manufacture carrie expence of a company in Glaſgow. Coar and cottor are woven at Dunblane; and, at the weaving of cotton goods, and tambour-ſ been lately introduced. At Thornhill, leath and curried to a conſiderable extent. There is a large mill, erected for ſpinning cotton, wh by water, and is conſtructed with very ſuperior machinery. At Bridge of Allan, there is bleach-field for linen-cloth. In all the vill diſtrict, there are artiſts of various denominatic the preſent ſtate of ſociety, when arts are divid

per claſſes, are very neceſſary to accommodate the country. Theſe tradeſmen, in the earlier ſtages of ſociety, were not equally neceſſary, when every farmer, and every other man in the lower ranks of life, was his own artificer. This diviſion of handicrafts will become more diſtinct every day, and every man become more expert in his own profeſſion. Hence one great cauſe of the increaſe of villages.

3. *Climate.* The climate of this diſtrict, with regard to heat and cold, is neither ſo warm on the ſouthern parts of the iſland, nor ſo cold as thoſe in the North. It is not ſo rainy as on the Weſt coaſt, nor ſo liable to fogs and blighting Eaſt winds, as the counties that lie upon the German ocean; but, as it extends nearly acroſs the iſland, the extremities in both directions are ſubject, in ſome degree, to theſe varieties, while the midland parts of the county feel leſs of the effects of either; except in the vicinity of high mountains, which attract the clouds, and bring on local rains, when the winds are weſterly.

The mildneſs of this climate, in former times, may be inferred from a variety of circumſtances, of which the following are a few. In ſome of the valleys of the Grampians, barley has been reaped, in good order, nine weeks after it was ſown, about half a century ago. In the year 1743, Sir Patrick Murray, of Auchtertyre, had his ſown graſs in the rick upon the 15th day of May, Old Style; and, upon the 29th of the ſame month, there were ſix Scotch pints of ripe ſtrawberries on his table, raiſed in the open garden.

Mr. Henry Stirling at the park of Kier, has, for forty-ſix years, kept a regular journal of the weather, the ſtate of the barometer and hydrometer, and has made occaſional remarks on the crops, and different branches of farming, during that period. If his health permit, he means to carry on his obſervations ſo as to complete half a century; and, when theſe papers are arranged, they may merit ſome no-

tice from the Board of Agriculture, and other
rural affairs.

The ſtate of the climate of late years, can
aſcertained by the following table, which
Burn, at Coldock, (whoſe farm is an exampl
and good huſbandry,) was ſo obliging as to
to me.

STATE OF THE WEATHE

Years	1790				1791				1792				
	Fair	Frofty	Rain	Wind Weſterly	Fair	Frofty	Rain	Wind Weſterly	Fair	Frofty	Rain	Wind Weſterly	Fair
January	15	8	8	24	8	—	23	21	9	13	9	11	1
February	11	2	15	27	7	6	15	21	15	8	6	16	
March	14	10	7	19	20	—	11	27	8	—	23	23	2
April	23	13	4	8	25	—	10	9	25	—	5	14	2
May	25	—	6	18	25	—	6	20	21	—	10	15	2
June	17	—	13	16	26	—	4	16	25	—	5	11	2
July	18	—	13	15	22	—	9	24	18	—	13	16	2
Auguſt	14	—	17	12	27	—	4	17	22	—	9	6	2
September	19	—	11	21	28	—	2	15	14	—	16	19	2
October	23	—	8	20	16	—	15	10	12	—	19	9	1
November	15	9	6	6	18	—	12	14	12	8	10	15	1
December	11	10	10	24	2	17	12	26	8	7	16	20	1
Total	195	52	118	210	219	23	123	220	189	36	141	175	24

N. B. December, 1793, is brought no farther than the 22d.

4. *Vermin.* Eagles often carry away lambs in their talons, to feed their young, which they hatch in the moſt inacceſſible rocks; but by the vigilance of the ſhepherds they are not ſo numerous as formerly.

The fox-hunters have regular diſtricts of the country under their care, from which they levy regular aſſeſſments on the different farms annually. But it were a wiſe meaſure, to make theſe aſſeſſments more moderate, and, beſides the aſſeſſment, to pay them a ſmall premium for every fox they could kill, and to ſubject them to a ſmall fine for every beaſt, that could be proved to have been killed by the fox. If this regulation were adopted, it would be a ſpur to their diligence beyond any thing that has been deviſed.

5. *Quarries, fuel, &c.* In almoſt every part of this ſurvey, there are good quarries of hewing ſtone, except in ſome places of the Highlands, where they have no ſtones but *granite*; but to compenſate this inconvenience they have abundance of ſlate.

The fuel made uſe of by the gentlemen, and many of the more ſubſtantial tenants, is coals; but peats, and peeled oak-timber, are uſed in many places diſtant from coal-pits. There are ſome fiſhings, but the ſmall rents they bring in the inland country, do not render them worthy of any detail.

A fire clay, fit for making ſtone-bottles, the beſt ſpecies of fire-bricks, and for the purpoſe of glaſs-houſes, has been diſcovered on the eſtate of William Dundas, of Blair. Its qualities are ſimilar to thoſe of Sturbridge clay; and the ſeam is from eight to fourteen feet thick.

A ridge of rock, three feet thick, where it is ſeen above ground, runs acroſs the Strath of Monteath, from the houſe of Leckie by Craighead, and makes its appearance again on the ſouth bank of the Teath, near to Gartinkaber's

march with Torry. A gentleman, who called it ſteatites.

There is plenty of iron ſtone along the coaſ lyallan, but the expence of labour, in that great, that theſe quarries are not wrought.

It may be evident, on the leaſt reflection, grain countries, the rents are made by the cr in graſs countries, the returns are moſtly fro and the ſale of beaſts. Within all the bound vey, the women are very induſtrious, and quantity of woollen and linen yarn for the ma what ſerves their families; but eſpecially Highlands.

7. WOODS, WASTES, IMPROVEMENTS MADE.

THE woods of this part of the county of Perth are very extenſive. Copſe abounds where there is moſt ſhelter, and where the country ſeems to ſtand leaſt in need of it. The oak prevails in the valleys of the Grampians, where the ſoil is light and dry; aſh on the ſides of every brook; the alder in ſwamps and ſpouty land, and birch on the brow of every hill. Theſe kinds are often found intermixed with one another, where the ground has different qualities, in reſpect of expoſure, fertility, or moiſture.

In the low country, there are ſeveral natural woods, where the plants found cover, and where the ſoil was unfriendly to the operations of the plough; but there are many of the moſt bleak and expoſed ſituations, where hardly a ſhred appears to afford ſhelter from the cold, or to hide the ſterility of the land.

1. *Oak-woods.* Oak-woods are cut once in every twenty-four or twenty-ſix years. A few ſpare trees, of the moſt thriving appearance, and of the beſt figure, are left at proper diſtances, from one cutting to another, and ſometimes for three or four cuttings. The purchaſers of woods begin to cut, about the firſt of May, or as early as the bark will riſe; which depends on the progreſs of vegetation in particular ſeaſons, and the natural circulation of the fluids, which are always more abundant in the rind that ſeparates the outer bark from the ſolid timber. It is from this part

that trees and ſhrubs increaſe their diameter, and have therefore a ring for every year of their age. The cutting of oak woods, for the moſt parts, ſtops by contract from the middle to the end of July, which is too late; becauſe the ſhoots, which the ſtock ſends forth after that time, are not able to ſtand the winter's froſt. Contractors are generally obliged to have the *hag* * cleared by Candlemas, or at fartheſt by the middle of March, in order not to hurt the young growth of the ſucceeding year; and in caſe of failure are fined in damages. Inſtead of cutting all woods of a particular age, without reſpect to the ſoil, it might perhaps be more proper to cut woods which grow on dry ſoils at twenty years old, before the growth ſtunts, and the bark next the roots hardens; becauſe it is probable the young growth will then ſhoot more vigorouſly, than when the woods are allowed to attain the ordinary age. On rich ſoils, they may be ſafely allowed to grow, till the trees are eight or nine inches diameter at the root. If the advantage of the copſe only is attended to, no ſtandard ſhould be left, except ſuch ſeedlings as appear neceſſary to renew the ſtools, when old ones are wearing out; and they ought to be cut at the next ſale of the wood; becauſe, when left for three or four cuttings, they ſeldom ſpring.

When the bark is dried, it is ſent off to the tanners; and if they reſide any where on the coaſt, it is carried to the neareſt port. The price of bark has riſen much of late. Some years ago, one ſhilling was accounted a good price for the ſtone, iron weight; now 1*s.* 6*d.* is not uncommon †. The crooked timber, of proper ſize, is ſent to the different dock-yards; the other timber is either made into ſpoaks, and ſent to towns for the uſe of the coach-makers, is ſold to the country people for various purpoſes,

* One year's culling.

† About thirty years ago it ſold for one half of theſe prices.

or reduced to charcoal for the founderies. But the practice of charing timber, does not prevail ſo much as formerly; becauſe the directors of theſe works char the pit-coal found in their neighbourhood, and uſe it inſtead of the other; which ſaves them a long carriage.

The bark of the birch tree, was formerly more uſed in tanning leather, than at preſent, becauſe it ſeems that its virtues are leſs than that of oak. It gives the leather a beautiful light-brown or yellow colour. The bark of the willow and mountain aſh is uſed equally with oak-bark. The ſecond is ſaid to be a powerful aſtringent, not much inferior to the Peruvian bark, and a good ſubſtitute for it. It is ſought by the tanners principally, to excite a fermentation in their pools.

For ſome years back, in cutting woods on moſt eſtates, they are peeled to the ground; whereas, according to the former practice, the ſtock was never allowed to be peeled below the ax, or the place where the tree was cut. By this method, the young ſhoots are better ſpread, and have more air, than when they grew all in one buſh. They are nearer the earth, ſtanding on its own baſe, by which means, they reſiſt the winds more firmly, and acquire their nouriſhment from the ground more directly and plentifully, than through the medium of the old ſtock, or by forming a cruſt of new timber around it *.

Oak-woods newly cut are commonly incloſed, either with a ſtone wall, or with a part of their own timber, and ſaved from cattle, for the ſpace of five, ſix, or ſeven, years, according to the option of the different proprietors. But, unleſs the ſoil be uncommonly rich, in five years, or even

* Proprietors, who are careful about their woods, never allow the ſtock to be peeled below the ground, which might happen either by intention or by neglect; becauſe all ſhoots of oak, and other timber, ſpring from the bark only, and there can be no ſhoots of this timber from below the ground, as there is in ſome others.

in ſix, on ſome ſoils, the young ſhoots are
enough, to be out of the reach of cows, wl
greedily, nor ſtrong enough to reſiſt their
they preſs upon them with their breaſts, in o
at the ſucculent buds on the top. Horſes a
do ſo much miſchief, unleſs they are preſſed
when woods are eaten or cropt with cattle, th
thrive, until they are cut at the root; and in
ſooner it is done the better.

Proprietors, who are careful to improve t
by the management of their woods, do often
woods are newly cut, plant all the vacant ſpac
correſponding to the nature of the different l
Wherever hazel grows, acorns ought to be ſo
young oaks planted. Two or three cullings
which is done at a ſmall expence, would ſuffi
oaks got the maſtery. The hazel and oak d
ſame kind of ſoil and expoſure, a dry light gr
ping bank, and not far up the hill. Every ha
ſome oak, and every oak-wood ſome hazel
which ſhews that they are kindred plants in re
riſhment, although very different in point of

Beſides a variety of other plantations, whic
ferent parts of the country, there is, around t
and gentlemen's houſes, a fine ſhow of ſtatel
rious kinds, which relieve the traveller's eye
ornament to the neighbourhood. Within thi
they have extended their views farther, and ar
embelliſh their eſtates, and ſhelter their lands
their manſions; and from what has been alr
this reſpect, there is no doubt that they will
beautify and enrich their country.

2. *Moſſes.* Moſſes of ſmall extent, where th
ture of other earth, if the fall be conſiderable,

pared and burnt with profit; but, if the fall be inconſiderable, they may be planted with potatoes in lazy beds, and the furrows left open for drains. With the firſt white crop the ſeed of common graſſes ſhould be ſown, which will yield a heavy crop of hay for ſome years, and afterwards a plentiful ſpring of ſtrong coarſe paſture of the aquatic plants.

Where there is plenty of bruſhwood, deep moſſes, with a good fall, are ſometimes drained. The drains may be made of faggots, put in either longitudinally or ſloping, having the ſlope of the faggot always in the direction of the fall, or tranſverſely, in the ſhape of St. Andrew's croſs, and afterwards pared and burnt *.

There is one moſs undergoing great improvement, which the Board of Agriculture directed me to enquire into with care, and to ſtate with accuracy in this report. The moſs of Blair-Drummond, or of Kincardine, part of Moſs Flanders, already mentioned, conſiſting of 1500 acres, (of which a full and diſtinct account is given in the Encyclopedia Britannica), is diminiſhed, not by burning, the common way of improving ſuch ground, but by caſting it with ſpades into canals, which have a declination of one foot in every hundred yards, and convey it into the Forth. Theſe canals, being two feet wide, and two feet deep, run along the face of the bank of moſs. This operation was begun in 1766, and carried on at firſt on a ſmall ſcale, by means of a ſtream, which had formerly been employed in turning a corn mill. But this ſtream was not only found inſufficient to carry away the moſs dug down by as many ſettlers as might offer, but was alſo precarious, by not ha-

* The ſpade for *paring* ought to be ſimilar to that uſed in Scotland for caſting turf, only a little more ſcooped in the iron and rounder in the fore part, with a perpendicular knife at one ſide of the iron, to cut the ſeal, as the Highland people have to the *lugged* ſpade, which they ſometimes uſe for caſting peats in tough maſſes.

ving

ving a ſufficiency of water in dry ſeaſons. Acco
was reſolved, in 1783, to introduce a ſupply
when forty-two tenants were employed, and 33
moſs let off, at the rate of eight acres to each lo
proſpect of this additional ſupply of water, fifty
tenants entered, between the years 1783 and
machine was erected in 1787, by Meikle of Al
form of a Perſian wheel, twenty-eight feet in
and ten feet broad in the float-boards, by wh
forty hogſheads of water are raiſed in one minu
mill-ſtream upon the Teath, and diſcharged in
ſeventeen feet above the ſtream which drives
and two feet higher than the ſurface of the moſs
ter is received from this ciſtern into circular wo
which are hooped with iron, having eighteen inc
diameter, and each four feet long. Theſe pipes
water 354 yards under ground. It then emer
carried in an aqueduct of two feet in the ſ
the ground, to the moſs. The expence of th
ceeded £1000 ſterling, for which the tenants h
to pay legal intereſt. To reward their induſtr
prietor had formerly made a good road into t
his own expence, which he lengthens from ti
as requiſite; and being reſolved that they ſhoul
his bounty by halves, he ſet them alſo free fro
gagements of paying intereſt for the ſum expen
curing the ſupply of water. This ſettlement
faſt, that the whole moſs is now ſet off. The
live moſtly in comfortable brick houſes, covered
which are divided into regular ſtreets and lanes,
diſtance of a hundred yards from each other.
theſe the canals are carried; and their ſtraigh
together with the elevation of the water at e
moſs, greatly facilitates its progreſs with its loa

There is low moſs at the ſkirts, which conſiſts of 400 acres, beſides high moſs of 700 acres, and flow moſs of 400 acres more. The low moſs was firſt ſettled, and the terms on it are, leaſes of thirty-eight years, with two bolls of meal and timber for houſes given gratis by the proprietor, for the firſt year. During the firſt ſeven years, the tenants pay no rent. The eighth year, they pay one merk Scotch *per* acre; the ninth two merks; and ſo on progreſſively to the end of nineteen years: during each of the laſt five years, the tenants pay alſo a hen. Upon the commencement of the ſecond term of nineteen years, they pay 12*s.* yearly for every acre then cleared from the moſs, and 2*l.* 6*d.* for every acre not cleared, and two hens yearly. The ſettlers on the high moſs, have alſo leaſes of thirty-eight years endurance, and the common allowance of meal and timber at their entry. For the ſpace of the firſt nineteen years they pay no rent; for the ſecond nineteen, their terms are the ſame with thoſe on the low moſs. No temporary houſes could be erected on the flow moſs; therefore thirty-five of the tenants on the high moſs have taken eight acres each. The terms are £12 advanced to each, at 5*s. per cent.* to clear an acre, and an obligation on the part of the tenant, either to ſell that lot or his old ſettlement, when the firſt acre ſhall be cleared.

The number of men ſettled in this moſs is 115, women 113, boys 119, girls 193, cows at leaſt 115, horſes and carts 35, acres cleared 300, bolls of grain raiſed 2400, at an average of eight bolls to an acre. There has not been a ſingle inſtance of a law-ſuit in the colony, nor a ſingle inſtance of a theft, nor any application to the public charity of the pariſh.

The proprietor, who cheriſhes theſe ſettlers as his children, is determined to add nineteen years more to the leaſes of the tenants on the high moſs, during which they are to pay one guinea *per* acre. He has divided the whole ſettlement

into ſix diſtricts; and to reward their induſtry
their emulation, he diſtributes premiums ann
diſtrict. 1ſt. To the perſon, who in the ſpace
removes the greateſt quantity of moſs down to
plough of the beſt conſtruction. 2d. For the
quantity, a pair of harrows of the beſt kind.
third greateſt quantity, a ſpade of the beſt kin
of red clover ſeed. He has alſo applied to t
Edinburgh for a ſchool; and upon obtaining
£10 for this purpoſe, he has built, in a centri
ſubſtantial houſe, for the maſter's family and fo
with brick walls and tile floors, and ſufficient
tion in all reſpects; and withal, he gives £5
the teacher. Mrs. Drummond's benevolence is
her huſband's, in her own ſphere. If any
hungry, ſhe feeds them; if cold, ſhe clothe
ſick, ſhe viſits them, and pays a ſurgeon of e
his medicines and attendance. I cannot expre
fication I feel at the happineſs of about 600 Bri
in this ſettlement, who otherwiſe muſt have
their country. Men, women, and children,
ployed; their gardens, and ſtacks, and patche
beſpoke their induſtry; contentment and heal
in every countenance, comfort and plenty in e
ing; and when mention was made of the favo
ceive, every tongue ſpoke the language of gr
eſteem.

This improvement is ſo valuable, both to t
tor himſelf, and ſo beneficial to the publick at
other proprietors on Moſs Flanders will prob
the example. There are two or three of theſe
who want neither the means of executing ſimilia
ments, nor the ſame opportunity of water to
to the beſt advantage.

3. *Moors.* There is a great tract of moor or waſte land, unfit for any uſeful purpoſe, except planting, betwixt Auchterarder and Tullybardin, and weſtward to the military road, or farther. A ſmall plantation of common firs have grown, on the middle of this moor, to a conſiderable ſize; and many ſpots are newly planted by different proprietors, which are generally in a thriving condition, and ſhew that it is a proper ſoil for firs. As the moor is already divided, if all the proprietors would put in land-marks on every march, and be at the joint expence of a bounding fence round the whole, each paying in proportion to the number of acres of his property incloſed; the great plantation would raiſe ſuch a foreſt, as would ſhelter the bleak country around it, and be productive of a vaſt return. Although fir woods are not eſteemed beautiful objects, yet they certainly are as pleaſant to look at as gloomy heath.

Any graſs within the limits of this moor is no doubt let to the tenantry, and they probably may have a privilege of caſting fuel upon it, but theſe ſervitudes could eaſily be compounded with the tenants, if the proprietors were in earneſt.

At preſent every acre of heath is at an average ſcarcely worth 16*d.* of rent; but let it be called 1*s.* which is more than the value. If it were planted, we may reaſonably ſuppoſe every tree grown to timber, would, in eighty years, be worth five ſhillings at leaſt. There are firs in this part of the country, planted between ſixty and ſeventy years ago, which are ſelling at preſent from 10*s.* to 15*s.* and many of them bring 20*s.* but allow 80 years for any difference which may be in ſoil or climate, and only one half of the loweſt price.

Suppoſe what might be planted of this moor to be ſeven miles long, and three miles broad, at an average. If the incloſure were a regular figure, having ſeven miles on two ſides, and three miles on the other two, the bounding

fence would be twenty miles long; but upon th
tion that the figure be irregular, having ſome ex
interior angles, let the fence be called thirty
length.

The area of this moor, ſeven miles by three,
one ſquare miles, which are equal to 10,700 acr
Every acre will plant 3422 trees, allowing ſixt
feet to each. At an early period, which depend
ſtrength of the ſoil, and the progreſs of the plants
be taken out; and each of the remaining trees w
twenty-four ſquare feet. At a ſecond weedin
third of the original number may be taken ou
remainder, being 1140, which are left to gro
ber, will each of them occupy a ſpace of
ſquare feet.

CALCULATION of the Expence and Profit in planting the Moor of ORCHILL.

PLANTATION Dr.

	£.	s.	d.
To rent of 10,000 acres, at 1 for 80 years, at 5 *per cent.* compound intereſt	519,607	13	10½
An earthen fence of 30 miles, 6 feet high, at 4*d.* *per* yard, with compound intereſt for 80 years, at 5 *per cent.*	43,614	1	6
36,615,400 fir plants, at 1*s.* 6*d.* the 1000 of 3 years old, with compound intereſt, at 5 *per cent.*	136,103	8	0
Planting ditto, done by 6 men to an acre, at 1*s.* 3*d.* each *per* day, with compound intereſt, at 5 *per cent.* for 80 years	198,865	6	8
Two foreſters, at £10 each of yearly wages, for keeping the fence in repair, weeding, &c. with ditto intereſt, at 5 *per cent.* for 80 years *	38,849	3	3
	£ 937,039	13	4½

PLANTATION CONTRA Cr.

	£.	s.	d.
By 12,105,133 trees, 80 years old, being one third of the number planted, and valued at 5*s.* each	3,051,283	5	0
Ditto number of weedings, taken out before 20 years, and valued at one halfpenny each, with compound intereſt, at 5 *per cent.* for 60 years, amounting to	474,955	12	0
Ditto number of weedings, taken out before 30 years, valued at one penny each, for 50 years, at 5 *per cent.* compound intereſt	583,163	5	4½
Balance in favour of planting †	£ 2,114,243	11	7½

* In the formula, by which theſe annuities are calculated, S repreſents the amount of the annuity at the end of any number of years; *a* the annuity, *r* the amount of £1. at the end of one year; $r-1$ the rate of intereſt, and *t* the continuance of the annuity

$$S=\frac{ar.^{t}-a}{r-1}$$

† Suppoſe that not $\frac{1}{3}$ but $\frac{1}{4}$ of the trees are left to grow to timber (being 855 on every acre, each occupying 64 ſquare feet), ſtill the balance in favour of planting will be £1,150,685 6*s.* 8*d.*

The prime coſt of the fence is £820, of the fir-plants £2,746 3*s.* which may in a great meaſure be ſaved; and of planting £4,012 10*s.* of which one-fourth may be ſaved. After the firſt 15 or 20 years, the foreſters will pay themſelves out of the ſale of weedings, and, beſides, will make a return to the proprietors.

After allowing the value of the weedings to go for back-gone trees, and other contingent expences, which ſurely is enough, the profit is beyond conception, unleſs one were at the pains to make a calculation; which, in the preſent caſe, it is hoped, has been done with accuracy, in order to ſet the matter in a clear point of view.

Were this plan to be adopted by the proprietors of this, or other large moors, larches might be planted in ſome places, eſpecially along the different marches; and wherever the ſoil, or the bleakneſs of the expoſure, is thought unfriendly, larches might thrive as well as common firs, being the hardieſt plant of the two. Eight or ten rows of ſpruces, as having the beſt ſhelter, by continuing always feathered to the root, might be planted next the fence round the whole, to defend the plantation from ſudden guſts or ſtreams of wind. The expence on the plants might be, in a great meaſure, ſaved, by having the ſeed ſown at home; and three boys would ſuffice for three of the men, which would ſave one-fourth of the expence of putting down the plants.

That every poſſible chance of doing good may be embraced, and that perſons having ſmall waſtes may eaſily diſcern the profit of planting ſuch ground, it may be neceſſary to accommodate the calculation to a ſmall ſcale.

One acre of land at 1*s.* of yearly rent, by compound intereſt at five *per cent.* for the ſpace of eighty years, is worth £48. 10*s.* 11½*d.* The ſame acre, planted with common firs, and weeded down by various thinnings to 1140, and ſold at the end of 80 years for 5*s.* each, would amount to £285. And if more valuable timber were planted, it would bring more.

Whenever the land will not let at more than 1*s.* or 1*s.* 6*d.* an acre, and is unfriendly to cultivation by the plough, the beſt method of turning it to account, is to plant it

full of trees ſuited to its nature, which, even with common firs, will bring a ſum equal to ſix ſhillings an acre of yearly rent; beſides that it is of no ſmall conſideration, that the moſt barren and bleak moor, by this management, will be rendered perfectly green; and, if paſtured by ſheep, will remain green, and continue to let at a decent rent.

On the ſkirts of the manor of Orchill, there is a belt of land, on which broom and furze are growing, particularly on the Eaſt and North. The ſoil, in which furze is found, invites the induſtrious huſbandman, with an aſſured proſpect of an immediate and plentiful return. Wherever broom grows the ſoil is lighter, and has for the moſt part, a gravelly or ſandy bottom. The former is a good mold, and fitted for moſt crops; the latter is well adapted for turnips and red clover; and, after reſting a a few years, will bear good crops of grain; but it requires to be tenderly dealt with in cropping. Let not the huſbandman be ſurprized to ſee theſe plants riſe, even at the interval of fifty years or more, after they ſeemed to be extirpated; for the ſeed of plants remain long in the ground, without being deprived of the germ or vegetative principle.

Marl abounds in the country round this moor, and is well fitted for ſuch light ſoils. Lime alſo is carried thither; and the numberleſs little rills, which deſcend from the moor in all directions, after rain, would enrich the graſs in many places, as may be ſeen at preſent in every little hollow between the hills. Theſe indeed act only as ſtimuli, which is the caſe with all calcareous earth, of which the two firſt are compoſed; but when argillaceous earth can be had at hand, it adds to the body of ſuch land as this, and enables it to ſtand more frequent tillage.

From behind Culroſs, all the way to Blairingone, there are ſeveral tracts of waſte and barren moor. The Earl of Dundonald has planted much; but more ought to be planted. In the moor between Gaſk, and Maderty, all the

way from Dollary to the vicinity of Perth, the tracts of ſtunted heath that might ſtill be plant ground, fit only for being planted, between In Newton; and on the verge of the bank, Eaſt dagie. In the two places laſt mentioned, mo foreſt trees than firs would thrive.

On the higher parts of the Sherrif moor th 7000 acres adapted only for being planted. The of this moor are, in ſome places, cultivated; being deep, if it were drained, pared, and burn be improved ſtill farther upon the moor. The being planted with trees, and the ſkirts of the lage and in graſs, would be both an ornamen try, which is naturally cold and bare, and that was once ſignalized by the victory obtained by of our conſtitution in Church and State, would proof of the induſtry of their poſterity:

" Scilicet et tempus veniet, cum finibus illis
Agricola, incurvo terram molitus aratro,
Exeſa inveniet ſcabrâ rubigine pila:
Grandiaque effoſſis mirabitur oſſa ſepulchris.'

The vaſt fir-woods, which are growing in Strathſpey, and other parts of the North of S much farther above the level of the ſea, than places I have attended to. The plantations of donald, and thoſe on the knock of Crief, are th ſoil as poor. Theſe inſtances, and the fine lately cut down at Turleum, may open the eyes ſee what might be done on the Sherrif moor, on chil, and on ſimilar places, which, at preſent very little.

In many other parts of Strathallan, in all th tween Dunblane and Callander, above the aral

between the Port of Monteath and the Bridge of Teath, to the Eaſt end of that moor on both ſides; and many other places, where either fuel or wood is ſcarce, and the country expoſed, proprietors would find their account in planting. The valleys of the Highlands do not ſtand ſo much in need of artificial cover, as the Champaign country below. Their broken ground, and their natural woods, ſhelter them: yet even at the entrace of theſe valleys, there are extenſive plantations, particularly at Gartmore and Auchtertyre.—Beſides the moors already mentioned, there are ſome other *low-lying* waſtes, covered with a thin ſtratum of moſs, above a bed of gravel, which produce nothing but heath. One of theſe are at Comrie, one near Dunira, one at Doune, and one near Callander *. That at Dunira is the only one of theſe which has in any degree been cultivated. Mr. Dundas has planted the moſt barren ſpots, and has improved the rent. The plantations are in a thriving condition, which heightens the ſcenery of that romantic place. The verdant plains are contraſted with ſtupendous mountains, naked rocks raiſe their heads from the woods around them, and the majeſtic river adds grandeur and beauty to the whole.

Such thin moors as theſe † are improved three various ways, according to the ſyſtem of different farmers. I know improvers who would pare and burn the thinneſt ſtratum of moſs upon a ſubſoil of gravel, according to a general rule they have laid down for treating all moors in the ſame manner. The opinion of other improvers is, that the land ought to be ploughed firſt of all, and lie in that furrow for one year; that, againſt the ſucceeding ſpring and ſummer, it ought to be croſs-ploughed and harrowed, till the clods

* General Murray, of Strowan, has begun a village, in a neat ſtyle, on the moor of Dalganroſs, which, it is probable, will ſoon improve it.

† Compoſed of a few inches of the deciduous parts of heath on a ſubſoil of ſand or gravel.

are reduced, limed in autumn, and drawn in r
ploughed for the ſeed furrow in ſpring. But Mr.
of Camſmore, who has improved upwards of 50
new ground of this kind (which is more, perhaps
other perſon in Perthſhire has done), lays lime
face, and leaves it generally for two or three ſeaſ
into the ground, and mix intimately with the ſo
land has been well limed, the firſt crop will b
good, the ſecond heavy, and the lime is, by thi
well pulveriſed, that it is eaſily made for barle
ſeeds, the following year. His moors, cultivat
manner, which were not formerly worth one
acre, have continued to carry graſs crops wort
nine and ten ſhillings, for twenty years, withc
ture dreſſing, and without any ſymptoms of the
tempting to riſe.

There is a certain barrenneſs of ſoil, in which
delights, and whenever that barrenneſs is remov
not thrive. To every plant there is a particular
ſoil, and a certain degree of moiſture, warmth,
ſure, which is natural. Different plants, as wel
ent animals, have peculiar climates, which are acc
to their conſtitution; and even, in the ſame co
ſpecies of plant is found in the valleys, and anot
hills: nay, in the ſame field and ſoil, if its
qualities be changed by cultivation, its produ
change of courſe. Allow your drains to ſto
which has been once properly dreſſed, let it be
ſpouty ground, it is inſtantly filled with ſprits,
other aquatics. Drain and cultivate the ſame
and theſe coarſe graſſes diſappear, and others,
peculiar to dry land, ſucceed in their place. F
lead rivulets, or lay enriching manure on the
ground, and the richeſt carpet of cloſe graſs will
ſpontaneouſly. Remove theſe before it be fully

and it will gradually return to its former ſterility. Were all plants fitted by nature to thrive only in the ſame circumſtances, we would have at leaſt the half of the globe without any plants at all; what would therefore appear, upon a ſuperficial obſervation, a niggardneſs in nature, or a defect in the bounty of Heaven, is, upon a nearer inſpection, recognized to be the effect of conſummate wiſdom, and of goodneſs without bounds. From the frozen tops of the higheſt mountains, down to the warmeſt valleys, every degree of heat and cold, of barrenneſs and fertility, of wetneſs and dryneſs of ſoil, Providence has adopted to the nature of particular plants, which thrive where another ſpecies could not live: and theſe different plants are the food of different animals, that no creature might want its food.

Without entering upon that polemical point of agriculture, the *food* of plants (which has been long a problem, and will probably remain, to be ſolved by future ages), we may ſafely remark, that whatever is their food, they are taught by nature to ſeek after that food which ſuits their kind. They uniformly reject other food; and, when forced by the unſkilfulneſs of man, to accept of food unſuitable to their conſtitution, they ſoon decay. It is, therefore, probable, that the food of different plants is not the ſame, but that ſome of them prefer one kind of food, and ſome another, and theſe in different degrees. At any rate, wherever their natural aliment is, or when the earth is brought by induſtry to have that aliment, *there* we uniformly ſee them make their appearance, and yet we cannot rightly tell how.

4. *Banking.* At the junction of the Earn and Tay, Mr. Sommerville, a ſpirited farmer, has banked off the river, an iſland of twenty-one acres; and has made a road, two chains long, between the iſland and the main land, through

a depth of twelve feet at low-water. Six feet
already gathered in the bottom of the gully or
in a ſhort time, the iſland will be joined to h
has alſo banked about a mile on the ſides of
where the ſhore was low, and the land expoſ
tion. This bank is ſix or ſeven feet high at
and from fourteen to thirty feet in the baſe, all
expence. Lord Wemyſs has made a battery
join another iſland, near the ſame place, to
land.

The Earn overflows the land, not only at its
in many other places, from Comrie down to th
makes the greateſt havock from the Bridge of K
ward. It is, therefore, an object of importa
heritors and tenants, to endeavour to protect
the crop from theſe deſtructive inundations; and
doubt, but they often loſe, in a ſeaſon or two,
the expence would amount to. Piers of ſtone a
made; but this is liable to an action for damag
ſtance of the oppoſite heritor, unleſs the ri
broad; it is not in every place that ſtones can
hand; and the river often recoils with double
the oppoſite bank on the place immediately belo
Sometimes large creels are made and filled with
in a tract ſo long as that in queſtion, and whe
ſcarce, this bulwark would be both partial an
It might ſerve the purpoſe equally well, ar
cheaper, to raiſe a bank of earth ſomewhat hig
floods, the conſtruction of which is well under
the danger ariſes from the river undermining
and rendering them of no avail. The eaſy rem
caſe ſeems to be, to erect the bank at a d
the brink of the river as to have room ena
ſlope forward to the bed of the river, in the f
glacis of a fortification; but this ſlope ought no

lie compoſed of earth or gravel. Furze, or juniper, or heath, (but not broom, nor any branches which are apt to rot.) ſhould be laid carefully among the materials, ſo mixed, that they would bind one another, and ſloping in the direction mentioned with their crops pointing forward, and downward, and beginning at the bottom of the ſlope. If the uppermoſt ſtratum of the declivity were made of tough ſod, taken from ſome neighbouring bog, and the ſeams well clapt together, and then planted with oſiers, it has been known to reſiſt the moſt impetuous ſtreams; becauſe the reſiſtance is gradual, the ſurface on which the preſſure is made is enlarged, and water is known to preſs not according to its breadth, but according to its altitude. On the Allan, on the Pow, in Balquhidder, at Aberfoil, and Callander, ſimilar inundations take place; and, it is hoped, the ſame precaution would render them leſs hurtful.

5. *Draining.* The draining of land is a ſpecies of improvement much practiſed, and much deſired, where it is neceſſary, by all induſtrious farmers. When the fields are horizontal, open drains are proper. In the up-land where round field-ſtones are to be had, rumbling drains are moſt in uſe; and where ever ſmall flags are at hand, the farmer builds a perpendicular wall of a foot high, and covers it above with flags. Some others make this laſt kind of drain in the bottom, and throw round ſtones above; which is thought to be the moſt perfect drain of all. Theſe drains are covered with ſtraw or thin turf, before the earth be thrown back, and are made of ſufficient depth to allow the plough to paſs over them with care. The prices are various, according to their dimenſions, and the convenience of materials.

Much draining is ſtill wanted in almoſt every part of this diſtrict; nor is it eaſy to ſay what is the good of land, for

any crop in this country, nor what the effect of manure can be, while the ground lies in water. As the knowledge of farming advances, there is no doubt but draining will be alſo carried on. But if ground be incurably wet, and ſo poor, as not to defray the expence of laying it dry, to plant aquatic trees, of the poplar kind, is the beſt mode of cultivation. Any other trees will not thrive without ſmall cuts to carry off the water.

Draining and incloſing are not only eſſential, but permanent improvements of land; and, therefore, are the firſt ſteps taken, when the proceſs is planned with judgement. For this reaſon the proprietor ought to execute them himſelf. If they are carried on during the currency of a leaſe, a centage may be neceſſary on the ſum laid out; but when the leaſe is renewed, it is proper to add this intereſt to the aggregate ſum of the rent, and to charge the whole under the general name of rent. A great number of items in a tack, are odious things to the generality of tenants.

6. *Trenching.* The trenching of land in the open-fields, where it is coarſe and full of ſtones, is not ſo expenſive as is generally ſuppoſed, if the profit ariſing from it is taken into the account. There is no other method ſo effectual to reduce a ſtubborn ſoil to a proper mold, to pick out the ſtones, which might be troubleſome in future operations, or to diſcover the ſubterraneous ſprings, and lay it perfectly dry. This practice is much followed in the neighbourhood of Glaſgow, and was introduced into this country by the late Mr. Buchanan, of Leney. An improvement, which frequently appears to be the moſt expenſive at firſt, is often the cheapeſt in the end, becauſe it is complete at once, and needs not to be repeated. In fields of ordinary difficulty, two or three crops will pay the ex-

pence of trenching; and, near a gentleman's place, a piece of untoward ground, which he is reſolved to dreſs, cannot be improved with equal ſucceſs in any other manner.

7. *Societies.* There was a ſociety for agriculture at Dunblane, which continued for twenty years. It dwindled away ſome time ago, but did good in the country, while it ſubſiſted. There is at preſent an agricultural ſociety in Strathearn, which meets twice at Perth, and once at Creiff every year. Moſt of the gentlemen of that country, and ſome of the moſt intelligent farmers, are members. They diſtribute a variety of premiums for certain kinds of improvement. At Doune there has been a ſmall ſociety of gentlemen in the neighbourhood, who are deſirous of comparing notes, and of converſing together on agricultural ſubjects.

8. *Genius of the People.* The people in general ſeem to have a ſpirit for improvement; but, it muſt be acknowledged, that it is greater in ſome places than in others. Where the heritors improve upon an economical plan, which the tenants ſee to be within the reach of their circumſtances; when they are at pains to convince them, that it is their intereſt to adopt a new ſyſtem, and the balance is fairly on the ſide of profit; when one of their neighbours, a perſon of the ſame claſs with themſelves, is making rich by improving his farm, this cannot fail to be a powerful incitement to the farmers in the neighbourhood. When the land is incloſed to their hand, and no drudging ſervices exacted; when additional manure is convenient, and good examples every day before their eyes, their emulation will do the reſt. The principle of imitation allures them; their avarice ſtimulates them; the cravings of lux-

ury, and the love of ſhow, ſolicit them; and
pride, and their envy, lend their aid to rouſe t
prove their lands.

Agriculture, however, is a progreſſive thi
progreſs depends on a variety of cauſes. If th
poor, if they are ignorant, if their farms are t
proper examples are wanting, or if they are dep
fruits of their induſtry by any ſiniſter means,
will improve.

8. OBSTACLES TO IMPROVEMENT.

THE obſtacles to improvement are many. Some of them may with eaſe be removed, others with more difficulty. Some ariſe from the ſituation of the country, others from the indolence of the tenantry, and not a few may be aſcribed to the proprietors themſelves.

1. *Townſhips.* A number of farms in one village, or ſeveral tenants about one plough, having their land mixed with one another, is a great bar to the improvement of any country. However neceſſary theſe townſhips were, for the mutual aid of the inhabitants, in rude ages and unſettled times, when the ſafety of a man's perſon, the protection of his family, and the ſecurity of his property, depended more on the affection and prompt aſſiſtance of his neighbours, than on the arm of the civil magiſtrate; yet in the happy times in which we live, ſuch cluſters of houſes are no longer neceſſary. Many inſtances might be pointed out, where all the tenants on ſeveral ploughs, and a number of cottagers, are huddled together in one hamlet.

2. *Runrig.* It is equally abſurd, to ſee two or three, or perhaps four men, yoking their horſes together in one plough, and having their ridges alternately in the ſame field, with a bank of unploughed land between them, by way of march. Under this management, four people muſt concur in opinion with regard to the time and manner of ploughing every field, the kind of crop to be ſown, and

the ſeaſon and weather for ſowing; and whether they and their horſes are to be employed or idle. By the policy of the feudal times theſe diminutive poſſeſſions were carried to ſuch a length, that in ſome places of Scotland, the phraſe, *a horſe's-goat** of land is not entirely laid aſide. Conſidering the various avocations which they muſt have, and the little jarring animoſities which will neceſſarily ariſe in a cloſe neighbourhood, where oppoſite intereſts are conſtantly interfering, it is impoſſible to expect that any ſpecies of improvement can go on. Whereas, if every farmer had his land ſet off by itſelf, and his ground incloſed, he may improve, if he is inclined to be induſtrious, without being fettered by his neighbour's temper, or ignorance, or lazineſs; and if he is not inclined to work, his farm ſtands out a ſpectacle to the whole country, and a memorial of his indolence, inſomuch, that if the admonitions of his landlord, the example of his neighbours, his own intereſt, and the care of his family, have no effect in rouſing him to be induſtrious, he marks himſelf, as it were with his own hand, as a fit perſon to be ſet adrift at the end of his leaſe.

3. *Marches not ſtreighted.* In ſome inſtances, the marches betwixt different proprietors are not ſtreighted, of which neglect examples might be pointed out; without which, the land can neither be incloſed nor improved. In all theſe caſes, it is evident, that both landlord and tenant muſt ſuffer.

4. *Servitudes.* Any thing demanded under the name of rent, except money, or perhaps part of the produce of the farm, is an obſtacle to improvement. If the proprietor be diſtant from fuel, and the carriages of his own horſes are-

* The ſixteenth part of a plough-gate.

ab'e

able to ſupply his family in that neceſſary domeſtic article, it is not to be expected, that the carriage of fuel by tenants, is altogether to be laid aſide. But the ploughing or harrowing of land, the mowing of hay, the ſhearing of corn, or any other ſervices, which divert the ſtrength of a farm from its own labour, are of the worſt conſequence to agriculture. The ſpirits of the people are ſunk, and their vigour enervated by theſe bondages. Whenever the country is improved, very few ſervices are exacted; and in many caſes, nothing except a money rent. The payment, even of grain, occaſions endleſs diſputes, which have the worſt effect, betwixt parties, where uninterrupted harmony is equally the intereſt of both.

5. *Thirlage.* Thirlage is a grievous bondage, and its pernicious influence, on the improvement of the country, is felt in every place, where it prevails. At ſome mills, the multure is of five lippies out of every ſixteen pecks of grain, which is nearly a thirteenth part of the whole; at other mills, it is ſix lippies out of ſeventeen pecks, which is a twelfth part of their reſtricted grain; and at one mill, it is the tenth part. This is an odious tax, becauſe it is, in every ſenſe, a tax upon *induſtry*. The ſloven in all caſes pays leſs than the good improver. It is therefore, not only unjuſt, but unfair. Its principle is wrong, and both the manner and degree, in which it is levied, are no better. Inſtances are not wanting, in which ſkilful farmers are obliged to depart from the rotation, which their good ſenſe dictates to them, on purpoſe to avoid this tax on certain grains, and there are alſo inſtances, in which they pay multure for grain, without having the benefit of a mill to grind it. But one will ſay, are the proprietors of mills to loſe the rent of their mills? By no means. Let the rent of the mill be divided according to the average of three or

five years of the produce of every farm within t
and paid (annually, or at once, by ſo many y
as is thought reaſonable) by the lands thirled
If the farmers chooſe afterwards to reſort to t
let a compenſation in grain or in money be
miller for his trouble. But, to make the bar
both ſides, the proprietor of the mill, ought
to keep the mill in good order, in lieu of the
was probably the origin of thirlage. In order to
ment, the miller will, by this new regulation,
intereſt to treat his cuſtomers with diſcretion,
form their work readily and honeſtly; wherea
his humour, rather than a ſenſe of his duty,
his conduct. He does not conſider himſelf t
vant, but the *maſter* of his cuſtomers, well k
the yoke is wreathed ſo hard about their neck
dare not paſs his door.

6. *Shortneſs of leaſes.* The ſhortneſs of lea
caſes, and in others, there being no leaſes at
the ſpirit, and ties up the hands of the huſba
improving his farm. No man will labo
for any length of time, to promote the emolu
other, in which he has no perſonal intereſt.
capable of no improvement, there is ſurely t
ariſing from an uncertain tenure; but farms i
cament are very rare; and ſcarcely can any pla
out, to which nature has been ſo unkind, that
be done to meliorate its condition.

The ſame term of years may not ſuit the le
country. In graſs farms, no doubt, there
done; but when there is command of water fr
and land on the face of theſe hills, which ma

* The diſtrict of country bound to a mill.

to be made green; where there is uſeleſs bruſh-wood to be grubbed out, and meadows to be cleared; where the land is open, and no incloſure between the hill and the winter paſture, nor the patches of arable land divided into ſmall cloſes, where is the tenant, in his ſenſes, who will be at the expence of theſe improvements, on a leaſe of nine years? Were he ſo fooliſh as to lay out his money upon theſe terms, he knows that he would, in every ſtep of his progreſs, be acting againſt his own intereſt; for, very probably, by the time that theſe improvements were finiſhed, his leaſe is out, another man ſteps before him, and gets him turned out of his farm. The leaſt evil that could befall him, would be, to pay more rent for the very improvements he had made, at his own expence, without being reimburſed.

In grain farms, ſurface-improvements are not only neceſſary, but the body of the ſoil is alſo to be meliorated; and on theſe farms I have uniformly found the tacks to be longer; but even ſome theſe are too ſhort, to encourage an induſtrious farmer, who has much to do, to exert himſelf to improve his farm, with any proſpect of drawing back his money before the end of his leaſe. A wiſe and humane landlord, ſuits the duration of his leaſes, to the ſtate of his *lands*, and the *induſtry* of his tenants; allowing every man, a reaſonable time to indemnify himſelf, for the expence of his own improvements, before the expiration of his contract.

7. *Diſtance from manure.* The diſtance, in ſome parts of the country, from lime and other ſtimulating manures, is an obſtacle to improvement, which cannot eaſily be removed. This inconvenience is owing to the local ſituation of different places, but the other obſtructions are entirely owing to men, who neither ſtudy their own intereſt nor that of the community.

There

There is however, ſuch an abundant quant
near thoſe places, which are moſt remote fron
ſome of theſe treaſures ſtill unopened, that if
diſtant, the other is at hand. When the roads a
of which there is a near proſpect, from the t
lime markets, into the heart of the country,
will be more eaſy, and the horſes thereby enal
a greater load.

8. *Commons.* Moſt of the commons have b
Oglegirt moor, near the bridge of Teath, is
divided. The moor of Culroſs, which conſi
or a hundred acres, is not divided, and no pla
adopted. There is another common near M
the South entrance of Glendevon, which is call
edge, and conſiſts of 700 or 800 acres, on whi
of that place have a joint right of paſturage.
is too valuable to be planted, and too high
arable, and the expence ſaved, of every man
keeping his own ſhare, the proſpect of its bei
very diſtant, and not very neceſſary.

9. FARTHER IMPROVEMENTS SUGGESTED.

VARIOUS improvements have been pointed out, in the preceding pages of this report. Under the laſt article eſpecially, whatever obſtructions occurred, that had a tendency to retard the improvement of the country, together with the means of removing them, have been taken notice of.

1. *Emigration.* In order to prevent emigration two things ſeem to be neceſſary: 1ſt. To provide food for the people; and 2dly, to find accommodation for them. The quantity of food will no doubt be increaſed, under the auſpices of the board. But, conſidering the ſituation of the Highlands of Scotland, unleſs villages, under wiſe regulations, be increaſed in number and in ſize, and hired ſervants kept in the arable farms, the evil is only half removed; whereas, if maintenance, employment, and lodging, be provided for the people, their attachment to their natal ſoil will do the reſt. In the ſheep countries, there are many convenient ſpots, where villages may be eſtabliſhed; and the ſheep ſyſtem may proceed too rapidly, leſs this remedy be provided.

There is plenty of wool in the Highlands, to employ the people in ſpinning, plenty of land fitted for potatoes, and of paſture fitted for mutton to feed them, plenty of timber to erect houſes to lodge them, and plenty of peats to be their fuel. There is more humanity in rendering mankind

happy and comfortable, than in driving them
native home, to wander they know not where:
dence, in having artiſts at hand, for being employ
viding the various neceſſaries, which the advance
the country, and the taſte of the age, require, tha
ing theſe at a dear rate, and carrying them from
ſurely there is more patriotiſm in contributing to
people in their own country, to fight our battl
time of need, and defend every thing that is dear t
than to chaſe away the natural guardians of our
and independence, to ſeek an aſylum on a forei
Muſt Britain be a cruel ſtepmother to her childr
ſhall the highland gentlemen, whoſe forefathers h
in the number of their men, ſhut up their bowels
againſt the children of thoſe who fell by their fat
Have the anguiſh and the tears of their kindre
their blood, no effect in melting their hearts to
feelings of compaſſion? And is the bleſſing of hi
ready to periſh, not worthy of being enjoyed?
ferent was the conduct even of the Heathens
tenants *!

2. *Planting.* Mention has been made already
ing waſte land; but every kind of timber is not
every kind of ſoil. An elegant writer on huſban

> Fraxinus in ſylvis pulcherrima, pinus in hor
> Populus in fluviis, abies in montibus altis.

The larch is the faſteſt growing tree we have,
moſt valuable ſpecies of the pine. It is cloſer in t
has fewer large knots, and the wood is more dur

* Lucium Voluſium aſſeverantem audivi, patris familias felici
dum eſſe, qui colonas indigenas haberet, et tanquam in paterna
notas, jam inde a cunabulis longa familiaritate retineret. Colum.

the common fir; and withal, it grows double the number of cubical feet in any given time: but, owing to the fastness of its growth, it is apt to bend, when exposed alone to violent winds. They are well adapted to this climate, and are said to have been brought at first from the Alps. At Monzie, they are five feet in diameter. I saw them at another place, planted about forty-seven years ago, between twenty-four inches and two feet nine inches diameter, at five feet from the ground; a size, to which no other tree, in this country, would arrive in that time: the boards had very little white timber at the edges. And at another gentleman's place, in the course of this survey, I saw posts of larch, which had stood fifteen years in a moist soil, and seemed still to be fresh and strong.

Ash and elm, are the most useful kinds of timber for the husbandman, and for the next. The trees, which keep the leaf in winter, afford the best cover where shelter is wanted. Taste in planting, is discovered by the variety, and judgement, by having every tree of the plantation, in that soil which is best adapted to its nature. In choosing plants of forest trees, or indeed of any kind, it is proper to bring them from a nursery, as similar in the quality of soil and exposure, as possible, to the soil and climate where they are to be planted out. Many plantations have failed, by bringing young trees from rich and warm nurseries, near great towns, to a poor soil and bleak climate; many have failed by putting trees in ground unsuitable to their nature.

3. *Diminishing the size of lakes.* Between the parishes of Calander and Balquhidder, there is a spirited undertaking going on, by which eight or ten feet will be drained off Lochlubnaig, which is carried on at the sole expence of Mr. Buchanan of Cambhore. When this work is completed, upwards of fifty acres of rich land will be gained, on the [illegible] and at the west end of the lake, to the dif-

ferent heritors. The river above, will, by thef
have a better fall for ſeveral miles, by clearing a f
which will enable the proprietors in that tract, to
ſwamps on their eſtates, and to free their land f
water. And, although they are ſhy at preſent, y
they ſhall ſee how much their property is to be
this cut, there is a probability at leaſt, that they
tribute in proportion to the benefit they receive.
might alſo be drained, in ſome degree, at a final
and much land gained to the noble proprietor
feet of water might be let off the loch of Mont
much land both drained and gained, if a conveni
could be found elſewhere for the mills, which
by the water that iſſues out of the lake. Land
be gained at Loch-Achray, at a ſmall expence.

4. *Weights.* Much confuſion has ariſen to th
much chicane has been uſed by the artful, muc
tained by the ignorant, and many law-ſuits have
riſe, from the diverſity of weights and meaſur
ferent counties, and in different diſtricts of
county. Many propoſals and many calculations
made, and many books have been written on thi
and yet the embarraſſment does not ſeem to be ne
Without pretending to be any wiſer than oth
every perſon is at liberty, when the public goo
cerned, not only to entertain his own opinion, b
poſe it with deference and reſpect. Why have
delication for one weight or for one meaſure, mo
another? There was a time, when none of the
and when all things were bought and ſold by bar
none of them has more intrinſic excellence thar
The firſt weight known in this country, was a
from the brook, as the name ſtill imports. Let
knot, unleſs we can looſe it. If it is ſtill found t

ſible, to agree about eſtabliſhing any of the various weights we have, as the ſtandard for the whole nation, and for all commodities which are ſold by weight, why may not a member of the ſupreme council of the nation, take a ſtone from the brook, and propoſe to have it enacted that this ſtone ſhall be an ounce or a pound weight? If it is called a pound, let ſixteen parts of it be ſo many ounces, and ſo downwards, to other denominations; and as many parts added together called a ſtone weight, and upwards to hundred-weights, &c. The objections, to which this propoſal ſeems to be liable, are two. 1ſt. That it will be difficult thereby to aſcertain, the value of ſome commodities, which are commonly eſtimated by ſmall weights. But in a ſhort time, every perſon concerned in theſe, will calculate the difference betwixt the old weight and the new ſtandard, and every commodity from wool to ſaffron, and from lead to gold, ſhall come to its proper level. 2dly. That theſe proprietors, who are in uſe to receive payments from their tenants, vaſſals, or feuars, in commodities by a certain weight, will be puzzled how to aſcertain the exact quantity of theſe ſtipulated in their agreement. To remedy this inconvenience, let proportions be fixed betwixt the new ſtandard and the various old weights, and a table of theſe made public, and by the ſmalleſt attention to theſe proportions, all the difficulties on this matter may eaſily be overcome. Unleſs ſome one of the weights now in uſe, be made the ſtandard, it appears not to be impoſſible, in ſome ſuch way as is mentioned above, to have this matter adjuſted; and, under the ſanction of the Board of Agriculture, there is no doubt that all difference of opinion on this ſubject, may be accommodated.

5. *Meaſures.* There is a matter of equal difficulty, and of equal importance, which may naturally come under the conſideration of the Board; the having all grain, and every com-

modity, which is not liquid, ſold by weight, ſure. At preſent, grain is in moſt caſes ſold only, but the quality of the ſame kind of gra rious, in different places, by reaſon of the thi huſk, and the ſmallneſs of the kernel, that ſale is extremely fallacious. Whereas, if it that all grain were to be ſold by weight only, tion upon the lieges would be leſs frequent, mers more attentive to the quality of their grai

Unleſs it be thought proper to ordain, that be ſold by weight, the preſent embarraſſmen of that commodity, would be leſſened, at leaſt mity in meaſures over all the iſland, as is pro weights.

6. *Bridewells.* Owing to the defects of our c by which, in many inſtances, perſons are capit for leſs enormous crimes, than thoſe which ot with impunity, every poſſible remedy ought t to render the puniſhment adequate to the offe compariſon is there, betwixt ſtealing a ſheep o failing fraudulently for the fourth, or the half of a ling, by which many families muſt be reduced to want. The injury to the public, is ſurely in to the loſs ſuſtained.

By tranſportation, thoſe, convicted of cri only to infer an arbitrary puniſhment, are ſtrained from committing any more mal-prac native country, but they make no return to the for the damage they have already done. By ment of working houſes in the head towns counties, the public would ſave the expence ation, and ſome recompence would be made fo ſuſtained. Two ſmall adjacent counties migh one Bridewell, and large counties might have

tabliſhments. The Dunblane diſtrict of Perthſhire, might very properly be united to Sterling. The licentiouſneſs of theſe times requires vigour, and the civil magiſtrate, ought to be powerfully ſupported in the execution of his office. In vain do we improve the ſoil, if the people become wild and uncultivated. With ſuch awful examples of the depravity of mankind at no great diſtance; where there is no police, every good ſubject muſt think himſelf bound, to contribute his mite to preſerve order, and to promote meaſures ſo eſſential to the welfare of the public.

7. *Thorns and trees to tenants.* When a tenant wants thorns for his farm, it would be proper that they were furniſhed by the proprietor. For this purpoſe, a ſmall patch of ground, adjoining to every gentleman's garden, or in ſome convenient place, might be kept for nurſing thorns, and other timber-plants, under the inſpection of his gardener. In order that the intention of the proprietor might not be fruſtrated, the tenant ſhould grant a receipt for the thorns, ſpecifying their value, and become bound to refund the price, if the hedge is neglected; but if the hedge is reared into a proper fence, no price ſhould be exacted. Or perhaps the heritor, if there be much to do, ſhould be at the whole expence of the fence in the firſt inſtance, and the hedge ſhould be afterwards reared and maintained, at the mutual expence of landlord and tenant.

In addition to this ſcheme, if the proprietor were to keep a nurſery of ſuch foreſt trees, as ſuited the ſoils of his eſtate, and were moſt uſeful to his tenantry, they might be allowed (leave being aſked and given) to cut down a tree, that was neceſſary for their purpoſes, upon planting a certain number along their fences, or in other proper places, having them always under their care, and at their riſk, till out of the reach of cattle; but if deſtroyed, to pay the full value of the tree cut and of the plants deſtroyed. The land-

lord, in this manner, could provide plants at little expence, the tenants would get a tree without paying for it, and in a ſhort time the eſtate would abound with timber. The complaints againſt the nakedneſs of our country would be removed, and our climate would be rendered as temperate, as it is poſſible for us to make it.

8. *Inconvenience.* Farmers are liable to one inconvenience, which affects no other claſs of men. Every manufacturer, every tradeſman, and every vender of the produce of this iſland, except the farmer, enjoys the excluſive right of ſupplying the home market, with the different commodities he can offer for ſale. Whenever the badneſs of the ſeaſon, which ought fairly to be felt by the whole nation, affects the farmer's reſources, the ports are thrown open, and inſtead of enjoying the excluſive profit of his own commodity, when he ſtands moſt in need of it, his gain is ſnatched from him, by perſons, who ſpeculate in importing foreign grain from countries, which, by paying lighter taxes, can afford to underſell the Britiſh farmer. While ſo much encouragement is held out to other profeſſions and claſſes of men, ought not the farmer to enjoy ſome ſhare of the public attention?

9. *Canals.* A plan was propoſed, about twenty-five years ago, to make the Forth navigable, partly by following the river, and partly by a canal, between the cruives of Craigforth and the bridge of Gartmore. The fall is twenty feet in that diſtance, and the navigation twenty miles long. Unleſs this plan ſhould be adopted, it was, at the ſame time, propoſed, to carry on the interior navigation of a certain part of Monteath, by the water of Goodie, which, in ſeven miles, falls only five feet, and is already cut at a proper breadth, and in ſtraight lines, through a conſiderable part of its courſe. From the improved ſtate of the

country, and the ardour of the tenants to improve it farther, there is not the ſmalleſt doubt (whatever might have been the caſe at that time) that the tonnage which would willingly be paid at preſent for coals and lime, and other articles imported from Stirling, and the exportation of grain carried down, to enter the great canal at Falkirk, and elſewhere, would bring a high dividend on the ſhares of the money ſunk. A canal might be made along the Pow, between Creiff and Perth, provided a ſufficiency of water could be found; and, I underſtand, that a ſurvey is propoſed to be made, next ſummer, for a canal in this direction, not only as far as Crieff, but to the eaſt end of Lochearn.

More locks would be neceſſary on this canal, than on the one in Monteath; but the ſame cauſes would render it a good concern.

10. *Correſponding ſocieties* To promote the views of the Board of Agriculture, and render their exertions, for the improvement of the country, more ſucceſsful, they might requeſt the gentlemen of moſt public ſpirit, in each diſtrict or county, to eſtabliſh farming ſocieties; one half of the members to be heritors, and the other half tenants; and to induce the tenants to attend, the expence ought not to exceed 1*s.* at a time. Their meetings might be held four times in the year, and all their tranſactions recorded by a ſecretary, who would report the ſubſtance thereof annually to the Board. A few ſubjects or queries, might be propoſed by the Board, to the different ſocieties, ſo that they would have the collective ſenſe of the beſt farmers and improvers in the nation, on any difficult point, before them at one time. The general tenor of their enquiries, might be left to their own choice. The Board would repay the good offices of theſe correſponding ſocieties, by ſolving the difficulties, which would occur to them, in the management of rural affairs. The benefits ariſing from an inſtitution of

this

this nature, is ſo evident, and of ſuch magnitude, that my limits will not allow me to point them out.

Some of the moſt ſenſible of the farmers in this diſtrict, expreſſed a wiſh, that the Board would take a piece of ground under their own management, to make experiments on different ſoils and crops, which the generality of tenants have neither knowledge, nor time, nor ability to make *.

11. *Premiums.* If the funds of the Board can ſupport the expence, it might excite great emulation, to hold out premiums to farmers for ſuch ſpecies of improvement, as the Board think moſt uſeful; and the correſponding ſocieties, might be appointed judges of the merit of competitors, in each diſtrict. Might there not be premiums for the beſt rams, as there are already in ſome places for the beſt bulls? Premiums for the beſt ſtallions, for the beſt grains of different kinds, the beſt turnips, the beſt potatoes, the greateſt extent of watered moor, or of new land cultivated in any other manner, &c.?

12. *Dogs.* Uſeleſs dogs are the greateſt nuiſance that can be imagined; and for ſome years, canine madneſs has produced ſo many lamentable effects, that a remedy is loudly called for. If every dog were to be taxed five or eight ſhillings yearly, thoſe which are uſeleſs would ſoon diſappear, and thoſe which are of uſe, could afford to pay the tax. The dogs, in moſt, if not in all counties of this part of the kingdom, conſume more food than would ſuffice to maintain all the poor within their bounds; and many perſons keep dogs, who are themſelves ſupported at the expence of the public.

* Some of the gentlemen expreſſed a wiſh that the Board would ſend ſome ſkilled perſons, to teach the people in this diſtrict, and elſewhere, the proper method of paring and burning.

13. *Pub-*

13. *Public taxes.* It was formerly remarked, that a number of diſtinct ſmall ſums, laid on a tenant in his leaſe, beſides the landlord's rent, galls him beyond meaſure. He is fretted with theſe, becauſe he conſiders himſelf as having no value for them. He never conceives, unleſs he be more liberal in his ſentiments than common, that the land-tax, miniſter's ſtipend, &c. are a burden on the ground he poſſeſſes, as legally due, as the rent, which the landlord draws. Every tax, therefore, which he pays, he criticiſes the meaſures of government, through the medium of ignorance and prejudice; and every ſtipend he pays, he deplores the defection of the times. The other taxes, collected by the officers of the exciſe and cuſtoms, do not rankle his ſpirits ſo much, becauſe he does not diſcern the train, by which they come out of his pocket. Were the proprietors of land to add theſe, and other ſmall ſums to the aggregate of the rent, to charge the whole as due to themſelves alone, and to pay the public burdens by the factors, they would prevent many diſcontents, which, however ill founded, often breed the moſt ſerious conſequences. Heritors would thus ſave their people from heart-burnings, and prevent their becoming the tools of deſigning men, who watch the opportunity, of blowing the hidden embers of diſaffection into a flame. By ſo doing, their own yearly income would not be leſſened a penny, while they would have the ſatisfaction, of being inſtrumental, in promoting the public good.

14. *Married Servants.* In place of unmarried ſervants, if the farmers were to build on a convenient place, a few houſes, for married people, they would be better ſerved in the mean time, their ſervants would be more loth to leave them, and the population of the country ſupported. It is a miſtaken and an illiberal opinion, that all married ſervants are diſhoneſt. They are not more ſo than others.

They are under many ties to be both faithful
They have ſeveral things at ſtake. Their child
be at hand to perform many little offices, ſo
than boys engaged for a whole year, at regu
and, in due time, they would grow up to be t
and the moſt expert of all principal ſervants.

15. *Propoſal.* Only one improvement mo
ſuggeſted, which ſeems to merit the ſerious co
of the Board. By the vague and inaccurate
which leaſes are generally written, or by the
which they are frequently interpreted in cou
much expence is incurred, much animoſity is br
landlord often deſpairs, of being able to bind t
by any contract at all, how well calculated foe
be, to promote the good of both parties. The d
lime and marl therefore, as manures, has, in many
contributed rather to exhauſt, and to deteriorate th
to promote its fertility. The ſoil itſelf, a na
perty of the moſt important conſequence, has
fered, from the imprudent uſe, of what might ha
or tripled its value. The intereſt of the whol
intimately concerned, in having, the ſoil manage
manner, that its fertility may not be impaire
rance or avarice, but promoted by every po
I hope, therefore, it is not foreign to my dut
geſt, that if the law of the land does not empow
to preſcribe to their tenants certain modes of
a law ſhould be enacted conferring that power.
an amendment of our law in this reſpect, the in
the Board itſelf, upon the improvement of the
can have leſs effect than otherwiſe. This law
brace the intereſt of both heritors and tenants.
ſtance of it might be, that whatever additiona
nant by ſigning his leaſe agreed to pay, upon a

from the reſtrictions and preſcriptions it contained, in that caſe, he ſhould be found liable to pay that ſum. But, on the other hand, that it ſhould be competent for the tenant, before or after a departure from the articles of his contract, to demand a jury, one half proprietors of land, and the other tenants, the ſheriff of the county or his ſubſtitute being umpire, who might decide upon the propriety of his departure, as it ſhould appear to them to be conducive to his intereſt, and no leſs ſo, to the improvement of the farm, than the mode of management preſcribed in the leaſe. This would put the matter on a fair and equitable footing between both parties; nor does it appear, that any reaſonable objection can be made againſt it. The contract is voluntary, and the engagements are mutual, on both ſides; and farmers are qualified in their own line, to judge, as well as heritors, of what is moſt conducive to their own intereſt.

Upon the ſuppoſition, that three, four, or even five pounds *per* acre, were the additional rent ſtipulated for the land cropped differently from the mode preſcribed in the leaſe; to a perſon, the leaſt acquainted with country affairs, it muſt appear evident, that any of theſe ſums is no adequate compenſation for the damage done to a farm; becauſe a ſcourging crop or two may render it neceſſary to re-let the ground, for a new leaſe, at five or eight ſhillings an acre cheaper, than what it might be expected to bring, before the ſcourging crops were taken: or, that the proprietors ſhould be at the heavy expence, for ſome years, of putting the farm again in heart. Of this deterioration, by the injudicious uſe of lime and marl, many inſtances might be pointed out, eſpecially in Strathmore.

CONCLUSION.

Of all arts, which employ the ingenuity of man
ture is not only the most ancient, but the mo
Upon this, all other arts depend; and men, in c
of society, from the highest to the lowest, are sup
its fruits. A well-cultivated soil, is more valuab
the mines of Peru, and all the pearls in the ocean
is a complicated art; and admits of different d
perfection. Without *experience*, without *applic*
without *capital*, it cannot be prosecuted with suc
that professes this art with capital alone, will fi
defective in some of the most necessary qualificati
exposes himself to the ridicule of the world; and
worse, to the danger of hurting his own circ
Does the banker trust the management of his cap
son, without a previous acquaintance with all th
cies of his art? Does the manufacturer think h
safe in the hands of his son, before he be bred
branch of the business, which he is about to pro
will the merchant commit the directions of his tr
who is not thoroughly acquainted, with the con
and the markets of different nations? No. Even in
common arts of life, there is a certain degree
ledge, of practice, and assiduity, which is de mod
sary as the possession of capital. And shall the p
[illegible], while capital is in land, be the only [illegible]
this general rule? [illegible]

His future experience is ſometimes bought very dear; Varro ſays, "That we may excel in agriculture, we muſt not only ſtudy the example of others, but, by our own experience, try to improve upon their practice *."

No man can be a farmer, without perſonal experience. All the books on earth will not ſuffice; and occaſional directions, founded on the experience of others, will create ſuch a jumble of ideas, ſuch a confuſion of plans, and ſuch a contrariety of procedure, that no effect can follow, but diſappointment and chagrin. If experience, therefore, muſt be acquired, is it not much ſafer to acquire it, under the tuition of a maſter, before one commences farmer at his own riſk, than afterwards, without any previous application. If errors are to be committed in the firſt eſſays of any art, are they not of leaſt danger during an apprenticeſhip. Columella ſays, "Experience and application are the beſt maſters; nor is there any profeſſion, in which we do not receive inſtruction, even by our own faults †."

But how is this to be brought about? How are the young gentlemen of the Britiſh nation, to be perſuaded, to relinquiſh the airy purſuits of youth, for the ignoble trade of a farmer. Let us reflect a little. Theſe are ſeated in the imagination; they are not under the controul of reaſon. They riſe upon application, and are not to be overcome by attack. If the fortreſs of vanity cannot be ſtormed, let it be taken by ſap. No trade is ignoble, if it were faſhionable. No purſuit is accounted diſhonourable, if it were countenanced by perſons of rank. Make agriculture the *ton*; and our young men of fortune will follow the faſhion.

* Debemus et imitari alios, et aliter ut faciamus quadam experientia tentare, l. 1. c. 18.

† Usus et experientia docet, neque eſt ulla diſciplina, in qua non percundo diſcatur, l. 1. c. 1.

Many great men of antiquity have been broug
culture to command armies, and to ſerve the
offices of truſt, of dignity, and danger. Di
Dentatus, for inſtance, who had thrice the ho
umph, and drove Pyrrhus out of Italy, con
plough, and return to improve his land. Cicero
ancients brought men from the plough to fill th
fices of the ſtate *. And Pliny ſays, "Gene
their fields with their own hands. The earth
believe) rejoiced to be turned up by a plough
laurels, and by a ploughman, who had been h
triumphs; becauſe he could handle the plo
ſword with equal ability, and plan his fields, w
diligence, that he pitched a camp †." Empero
and philoſophers, and ſtateſmen, have had a p
in ancient, but in modern times, to be accou
and have written upon that ſubject. Nothing is
lated to make agriculture the faſhion at preſent i
than a Board of Agriculture, compoſed of ſom
enlightened, of the moſt patriotic, and of the
perſons, in our age and nation; patronized by
who loves his people, and is beloved by th
ported by the countenance of a reſpected an
parliament.

The ſoil is the ſtock, the great capital, th
the nation. All other riches are fluctuating,
niſh; but this is wealth, which Britons will e
as they enjoy their country. We may hop
that this is the happy æra, in which the impro

* Antiquitùs ab aratro arceſſebantur, ut conſules fierent.

† Ipſorum manibus imperatorum colebantur agri, (ut fas
dente terrâ vomere laureato et triumphali aratore; ſive illi e
tractabant, quâ bella, eadamque diligentiâ arva diſponebant,
l. 18.

‡ De cultura agri præcipere principale fuit. Plin. l. 18.

ſoil will be treated with the attention it deſerves, that agriculture will become the faſhion, that the turf will give place to the plough, and that good oats will be ſown, in place of oats which are wild.

O happy, if they knew their happy ſtate,
The ſwains, who free from bus'neſs and debate
Receive their eaſy food from nature's hand
And juſt returns of cultivated land! * DRYDEN.

Marks of diſtinction and eminence, in the improvement of land, which will not fail to be held out by the Board; the ſhining example of many of the preſent proprietors, to which their own eſtates can bear teſtimony, better than any thing I can ſay; and the growing faſhion and ſpirit of the times, will all conſpire, to draw the attention of the riſing generation, to the moſt healthy, the moſt innocent, the moſt pleaſant, and the moſt patriotic of all purſuits, namely, the improvement of the country; and the difference of rank, will not be marked merely by accidental circumſtances, but by the true diſtinction of doing good.

If the line of improvement, which the preſent generation has marked out, ſhall be followed by ſucceeding heirs, it muſt, and doubtleſs will, be adopted by the tenantry at large, and advance rapidly to perfection. Then every acre will be cultivated to the higheſt advantage; then the increaſe of the food of man will produce an increaſe of inhabitants; then Britain will become, in the language of a great man, "The garden of Europe;" then the waſts, which are not worth at preſent more than 1*s.* 6*d.* the acre, will produce 6*s.* in planting; then the barren glebe, which makes but

* O fortunatos nimium, ſua ſi bona nôrint
Agricolas! quibus ipſa, procul diſcordibus armis,
Fundit humo facilem victum juſtiſſima tellus. VIRG.

three ſcanty returns, will be left in paſture; a
ſoil adapted for tillage, will, by the alternat
white and green crops, reward abundantly the
the huſbandman; and demonſtrate to the world
the agriculture of Britain has been brought to p

ERRATUM.

Page 44, line 12, for *two* read *ſeven*.

GENERAL VIEW

OF THE

AGRICULTURE

OF THE COUNTY OF

AYR.

GENERAL VIEW

OF THE

GRICULTURE

OF THE COUNTY OF

A Y R,

BSERVATIONS ON THE MEANS OF ITS IMPROVEMENT.

BY COL. FULLARTON,

OF FULLARTON.

Gt Brit.

'N UP FOR THE CONSIDERATION OF THE BOARD OF AGRICULTURE AND INTERNAL IMPROVEMENT.

EDINBURGH:

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ADVERTISEMENT.

THE following valuable communication, reſpecting the preſ
of huſbandry in the county of Ayr, and the means of its impr
drawn up for the conſideration of the Board of Agriculture, is n
ed, merely for the purpoſe of its being circulated there, in order
ry perſon, intereſted in the welfare of that county, may have
power to examine it fully before it is publiſhed. It is therefore r
that any remark, or additional obſervation, which may occur to
er, on the peruſal of the following ſheets, may be tranſmitte
Board of Agriculture, at its office in London, by whom the ſame
properly attended to; and, when the returns are completed, an
will be drawn up of the ſtate of agriculture in Ayrſhire, from the
tion thus accumulated; which, it is believed, will be found grea
rior to any thing of the kind ever yet made public.

The Board is now following the ſame plan, in regard to all t
counties in the united kingdom; and, it is hardly neceſſary to a
be happy to give every aſſiſtance in its power, to any perſon wh
deſirous of improving his breed of cattle, ſheep, &c. or of trying
ful experiment in huſbandry.

TO SIR JOHN SINCLAIR, BART.

PRESIDENT OF THE BOARD OF AGRICULTURE.

For remarks and observati

DEAR SIR,

Fullarton, Ayrſhire, Nov. 1793.

Introduction.

IT will afford me real ſatisfaction, if the following obſervations, on the agriculture and improvement of AYRSHIRE, ſhall fulfil the object of your application, and prove conducive to the purpoſes of that valuable inſtitution, which you have been ſo inſtrumental in eſtabliſhing.—Every landholder, whatever his purſuits in life may be, is bound in duty, and it is fortunate if he be alſo led by inclination, to promote the arts of cultivation, which form the baſis of all national proſperity. Happily for this country, the ſuperior influence of our conſtitution, has, in no inſtance, been more conſpicuous, than in its operation on every ſpecies of agricultural improvement. Inſomuch, that, although ſome favoured ſpots, ſuch as Lombardy and Flanders, have brought that art to an aſtoniſhing height of perfection;—there is no country in Europe, where men, poſſeſſing property in land, have ſo generally applied their ſkill and capital, to the encouragement of huſbandry, and the introduction of new modes of cultivation. Neither is there any circumſtance, which has tended more to aggravate the ſignal calamities, accumulated on the landed proprietors of a neighbouring and diſtracted nation, than their prevailing ignorance and inattention to that uſeful art, which it is the pride of this country to have cheriſhed with ſucceſs; and which, under the influence of ſo reſpectable an inſtitution as that where you preſide, we may hope to ſee advancing to a ſtill higher pitch of improvement.

Extent.

The county of AYR extends 90 miles along the weſtern coaſt of Scotland, from its ſouthern boundary, near Loch-Ryan, in Wigtonſhire, to Kelly bridge, which ſeparates it from Renfrewſhire upon the north. Its breadth is in general from 20 to 25 miles ——This county contains three diviſions; Carrick, on the ſouth; Coil, in the centre; and Cunningham, which includes all the northern diſtrict.

In

In ſo large a tract of country, great variety of ſoil prevails. —On the ſhore it is generally light and ſandy, interſperſed with deep and fertile loam. A great part of the county is of a ſtrong productive clay. In many parts a bare till or ſchiſtus extends for miles; and over it only a few inches of a better clay ſoil. Further up the country, there is a kind of ſpongy clay land, cold, wet, and obdurate; producing graſs, unfit, in its preſent ſtate, for fattening cattle, and merely ſufficient to keep alive a breeding ſtock. On the eaſtern boundaries of the county, the land is high and mooriſh, interſected with moſſes, bogs, and marſhes.

In deſcribing the agriculture of a county ſo extenſive as Ayrſhire, it is extremely difficult to ſpecify the various particulars reſpecting the ſoil, management, and produce, without deſcending to a very tedious minuteneſs of explanation. I am ſenſible, too, that this, like other georgical eſſays, muſt unavoidably be the dulleſt of all writings, except to thoſe who mean to derive practical benefit from the communication. It ſhall, however, be my endeavour, to lay before you ſuch a view, as may leave no material fact omitted:—Conceiving it to be your object, to trace the various cauſes which have retarded or accelerated the progreſs of improvement, and to collect the ſtatement of all that is excellent or defective in the agricultural ſyſtem of every county; in order that your Board may be enabled to deduce reſults, and form concluſions tending to the general advantage of the kingdom.

Before we enter on the preſent ſtate of Ayrſhire practice, it is eſſential to explain the barbarous miſmanagement from whence the county has emerged; containing, like many other parts of Scotland, and various ſpots in England, almoſt every thing that a good farmer ought to avoid. But, as acquired and rooted ignorance, is more difficult to conquer, than mere abſence of ſkill or knowledge, much praiſe is due to the landholders and farmers of this county, for the very rapid progreſs they have already made.——A ſtranger, paſſing through theſe diſtricts, muſt be ſurpriſed to obſerve ſuch a multitude of agricultural

agricultural defects ſtill exiſting: But his applauſe would undoubtedly be excited, when he underſtood the great difference between the preſent management and that which took place forty years ago.—At that period, there was hardly a practicable road in the county; whereas, at preſent, few parts of the kingdom are ſo well ſupplied in that particular. The farm-houſes were mere hovels, moated with clay, having an open hearth or fire-place in the middle; the dunghill at the door; the cattle ſtarving, and the people wretched. The few ditches which exiſted were ill conſtructed, and the hedges worſe preſerved. The land over-run with weeds and ruſhes, gathered into very high, broad, ſerpentine ridges, interrupted with large baulks, ſuch as ſtill diſgrace the agriculture of ſome Engliſh counties. The little ſoil there was, collected on the top of the ridge, and the furrow drowned with water. No fallows,—no green crops,—no ſown graſs,—no carts or waggons,—no ſtraw yards; hardly a potatoe, or any other eſculent root, and, indeed, no garden vegetables; unleſs a few Scotch kail, which, with milk and oatmeal, formed the diet of the people: With little ſtraw, and no hay, except a ſcanty portion of the coarſeſt quality collected from the bogs. The quantity of dung produced was of ſmall avail; and that portion, little as it was, the farmers dragged on cars or ſledges, or on what were called tumbler-wheels, which turned with the axletree, and ſupported the wretched vehicle, hardly able to draw 500 ℔wt.——The ground was ſcourged with a ſucceſſion of oats after oats, as long as they would pay for ſeed and labour, and afford a ſmall ſurplus of oatmeal for the family; and then remained in a ſtate of abſolute ſterility, or over-run with thiſtles, till reſt enabled it again to reproduce a ſcanty crop.

The arable farms were generally ſmall, becauſe the tenants had not ſtock for larger occupations. A ploughgate of land, or as much as could employ four horſes, allowing half of it to be ploughed, was a common ſized farm. It was often run-ridge or mixed property; and two or three farmers uſually lived in the ſame place, and had their different diſtributions of

the farm, in various proportions, from 10 to 40, 60, or 100 acres.

Many of theſe leaſes were granted for three 19 years. The rent was frequently paid in kind, or in what was called half labour, by the ſteel-bow tenants, like the *Metayers* of France; the ſtock and implements being furniſhed mutually, or on ſuch terms as could be fixed. One half of the crop went to the landlord; and the other remained with the tenant, to maintain his family and to cultivate his farm *. The tenants were haraſſed with a multitude of vexatious ſervitudes; ſuch as, ploughing and leading for the landlord, working his hay, and other operations; which, from the nature of them, unavoidably interfered with the attention neceſſary on the tenant's own farm. Theſe are now almoſt entirely aboliſhed.

The farm was commonly divided into what was called the croft, or in-field, and the out-field land.

The croft, which commonly was a choſen ſpot near the houſe, after two or three crops of oats, received all the dung produced from the farm; and then was ſown with bigg or four-rowed barley. It then remained a year in lay; and was broke up the following ſeaſon to undergo the ſame rotation.—As to the out-field land, it remained in a ſtate of abſolute reprobation. No dung was ever ſpread on any part of it. The ſtarved cattle kept on the farm, were ſuffered to poach the fields, from the end of Harveſt, till the enſuing ſeedtime; and thus the roots of natural graſs were cut on all the clay lands, or drowned with water ſtanding in the cattles foot-ſteps. The horſes, during Winter, were fed on ſtraw, on boiled chaff or weak corn, and on ſuch hay as the bogs and marſhes ſpontaneouſly produced.

As the winter ſeaſons, in Ayrſhire, are extremely wet, the plough was never yoked till Candlemas.—It does not appear that the farmers were in the practice of uſing more than four horſes

* Of this mode, there is at preſent but one remaining inſtance in the county.

horſes to each plough; but, there was a man to hold, another to drive, and a third to clear the mould board, and keep the coulter in the ground. The plough was of the Scotch kind; and, as the land was generally ſtiff and full of ſtones, and never properly cultivated, it was thought neceſſary to conſtruct it of the ſtrongeſt and moſt clumſy materials.—The cold and rainy ſprings ſuggeſted the practice of ſowing extremely late, ſo that oats were ſeldom harrowed in before April; and it was not unfrequently the end of May, before the big, or four-rowed barley, was put in the ground.

As there were few or no incloſures, the horſes and cattle were either *tethered*, during the Summer months, or truſted to the direction of a herd and cur-dog, by whom the poor ſtarved animals were kept in conſtant agitation; being impelled, through famine, to fly from their bare lays, and commit continual depredations on the adjacent crops.

Every farmer ſowed a ſufficiency of flax to employ the women of his family at leiſure hours. A ſmall portion of hemp was likewiſe planted to make ſacks and other coarſe materials needed on the farm. And a quantity of wool was either bought or reared for the purpoſe of ſpinning woolen ſtuffs to cloath the family. Theſe, as well as the linen were uſually worked by ſome weaver in the neighbourhood, and ſupplied the dreſs of both ſexes. The ſtalks of hemp were ſubſtituted in the place of candles; and, even in ſituations adjoining to a coalliery, whole months were waſted in cutting, drying, and leading peat; to ſerve as fuel.

The cattle ſtarved during Winter, hardly able to riſe without aid in Spring, and perpetually harraſſed during ſummer, never were in fit condition for the market. But undoubtedly they muſt have been of an admirable race and ſtamina, otherwiſe they never could have ſurvived the treatment they experienced.

Very little butcher meat was uſed, excepting a proportion, which every family ſalted at Martinmas, to ſerve during Winter, with their grots, or prepared barley, and kail or broth.

The reſt of their food conſiſting at that time, only of porridge, oatmeal cakes, and ſome milk or cheeſe. So ſmall was the conſumption of butcher meat in this province 50 years ago, that there were not more than fifty head of cattle annually killed in the county town of Ayr, at that period, although it contained from 4 to 5000 inhabitants: And, now, there are ſeveral thouſand cattle, beſides great quantities of ſheep, killed every year; inſomuch, that it is one of the beſt markets in the kingdom.

Wretched as the ſyſtem of management was, it is obvious, that the light, rich lands, would by no means ſuffer in the ſame proportion with the hard and tilly * ſoils. On the contrary, they produced conſiderable quantities of graſs, and kept the cattle, fed on them, in good condition.

With reſpect to the moorland part of the county; as its bleak and elevated ſituation, with the cold, wet nature of the ſoil, render it by no means favourable to the growth of corn, under any mode of management, it neceſſarily, in thoſe days, retained a relative barbariſm with the lower diſtricts. The moor farmers in general occupied great tracts of land. They were perfectly unacquainted with planting or incloſures. In the bottoms, ſome ſmall lots of corn were cultivated, and a few loads of coarſe hay obtained from the meadows. The farms were ſtocked with a proportion of black cattle, which when fat, did not weigh more than 16 or 20 ſtone Engliſh; and with a ſmall hardy race of wild, black-faced ſheep, weighing when fat, about 10 lb. Engliſh per quarter, and yielding not more than two or three pounds of very coarſe wool per fleece. The moor farmers having hardly any fodder, and no green

* Till, is an obdurate ſchiſtus or clay, unmixed with vegetable or animal ſubſtances, and unfit for purpoſes of vegetation, until it has undergone a very long amelioration. It is of ſo tenacious a nature as to hold water, thereby chilling and drowning the plants in wet ſeaſons; and, as it cracks and hardens, like a brick, in dry weather, it may be conſidered as the moſt unpropitious of all ſoils.

green feeding for their ſheep and cattle, the ſtock was regulated by the number that could be ſubſiſted in hard weather.

The ſtate of markets was in general ſo low, and public credit ſo ill eſtabliſhed, that no tenant could command money to ſtock his farm; and few landholders could raiſe the means of improving their eſtates. Indeed, when a laird wiſhed to raiſe money, he was obliged to ſell his property, perhaps for 20 years purchaſe, or accept of loans on wadſet: The nature of the obligation being, that if the money was not repaid within a ſpecified time, the land became the property of the lender.

There were no manufactures in the county, excepting of bonnets at Stewarton, and of ſhoes and carpets at Kilmarnock. Exports and imports from the harbours of Ayr, Irvine, and Saltcoats, were on a very ſmall ſcale indeed. In general, the fineſt lands were let for 2 or 3 ſhillings per acre; and there was neither ſkill, capital, induſtry, nor credit in the country to do away the wretchedneſs deſcribed *.

The conſequences of ſuch miſmanagement were truly deplorable. The people having hardly any ſubſtitute for oatmeal, were entirely at the mercy of the ſeaſon. If the ſeed-time was unfavourable, the ſummer bad, or the autumn late and ſtormy; a dearth or famine unavoidably enſued. The price of meal fluctuated, therefore, between extremes, which are never known in countries better cultivated; or where the means of ſubſiſtence are ſo varied, as to render the failure of one ſpecies ſuppliable by ſome other †. At the beginning of this century, and end of the laſt, there was a ſucceſſion of bad ſeaſons which laſted ſeveral years, and reduced the county of Ayr, and other provinces adjacent, to the loweſt gradation of want; obliging hundreds of families to fly for ſubſiſtence to the

* It is, however, true, that ſome rich holms and bottoms paid in kind to the extent even of two bolls of bear or big per acre.

† Frequently from 6d. to 1s. 6d. per peck, whereas, under the preſent improved mode of cultivation, it ſeldom varies more than 1d. or 2d. above, or below 1s. per peck.

the north of Ireland, where their deſcendants ſtill remain. At that time, the price of oatmeal roſe to 2s. 6d. per peck, weighing 8 lb. 10 oz. Engliſh.

In thoſe ſeaſons of miſery, the poor people have not unfrequently been obliged to ſubſiſt by bleeding their cattle, and mixing the blood ſo procured, with what oatmeal they could procure *.

In a country, ſuch as Scotland, where ſoil and climate, in many inſtances, unite to counteract the endeavours of the cultivator; it required extraordinary exertions indeed, to bring the county of Ayr in ſo ſhort a time from the degradation already ſtated, to that period of improvement, which, if continued for a few years longer, will entitle it to rank amongſt the moſt productive diſtricts in Great Britain.

The means by which this important change has been effected, require to be detailed. The landed property of Ayrſhire was parcelled out among a multitude of proprietors, under very different deſcriptions; from the petty feuar or emphyteutical holder, paying a fixed rent in perpetuity, for a houſe and garden, through all the gradations of vaſſals holding the property of farms, and paying quit rents to ſubjects-ſuperior; and of perſons who according to the feudal tities of Scotland, held eſtates in *capite* under the crown, from a few acres to 100,000, which is the largeſt in the county †. In ſhort,

* On reading this deſcription, one would think it applied to the dark and gloomy periods of the lower ages, when the beſt fields in Italy were deſolate; and when the north of Europe, under barbarous landlords, with ſerfs or bondſmen for their cultivators, exhibited thoſe ſcenes of ignorance and indigence, ſo emphatically deſcribed by Sigonius and Potgeſſerus.

† Thoſe feuars, of whom there are many in the country, probably paid the current rent for their feus at the time they were granted, and in ſome caſes perhaps more. But ſuch has been the riſe in the value of landed property, that theſe feu duties, now, are ſo perfectly diſproportioned to the actual rent, that they are little more than a mere acknowledgement, that the land is held of the ſubject ſuperior.

It has always occured to me, that if landholders chuſe to grant feus, in per-

ſhort, the tenures by which land was held, were various as the extent and value of the diſſerent eſtates.

The ſmall proprietor of 50 or 100 acres, was ſeldom ſufficiently active or intelligent to introduce amelioration. Contented with the produce of his fields, on the old ſyſtem, he left improvements to the upper order of proprietors. —— The medium lairds, or country gentlemen, were frequently driven by their ſituations and profeſſions into various quarters of the globe; and were no leſs diſtinguiſhed by their enlightened education, than by their intelligence and ſucceſs in various walks of life. But their habits and obſervations had hardly ever been applied to the beſt of all purpoſes, the cultivation of their native ſoil. Any attempts they made were feeble, deſultory, and unavailing; while the great lords and large proprietors, poſſeſſed ſuch extenſive tracts of uncultivated land, that to attempt a general ſyſtem of improvement appeared beyond their means: Neither was any plan thought of, for bringing the active exertions of the landed intereſt into one point of union and effect. On the contrary, deep rooted prejudices againſt innovation prevailed, eſpecially amongſt the inferior claſſes of renters and proprietors. The tenant conſidered all amelioration as tending only to augment his labour and increaſe his rent. If any landholder was hardy enough occaſionally to attempt improvement, he had every poſſible obſtacle to contend with. Labourers were ignorant and indolent. Stock, and implements, entirely inadequate and inapplicable to rational principles of huſbandry, and much time, labour, and expence, were waſted before any benefit could be derived from an improved mode of cultivation, in a country where the common elements of farming were rude and barbarous. No wonder, then, if thoſe, who firſt eſ-

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perſity for a rent certain, which is at beſt an improvident tranſaction, the rent ſhould be ſpecified, not in coin, which varies in its value, but in grain, which at all times muſt neceſſarily be the permanent ſtandard of value in every

ſayed the arduous undertaking were diſappointed in their hopes, and commonly impaired the property they meant to increaſe.

Fortunately, however, the country poſſeſſed within itſelf the means of improvement in a ſuperior degree. Extenſive tracts of very rich and valuable land; abundance of coal and lime, almoſt in every quarter; a number of towns and villages; which, although at that time deſtitute of arts and manufactures, were however commodiouſly ſituated, and ſcattered over the different diſtricts of the county.

But theſe advantages might long have continued dormant, had they not been called forth by the ſuperior energies of a few individuals, to whom the preſent advancement of the county is chiefly due.

About 40 years ago, the late Earl of Eglinton, who poſſeſſed a very large and valuable property, diſperſed over a great extent, in the moſt improveable parts of Ayrſhire, reſolved to reſcue his eſtates from the condition in which he found them. An eminent farmer Mr Wight of Ormiſton was brought from Eaſt Lothian to introduce the proper mode of ploughing, levelling ridges, fallowing, drilling, turnip huſbandry, and rotations of crop. Great attention was beſtowed on the breed of horſes and cattle. Ploughmen and dairy people were brought from various parts of England. Fences were made on an extenſive ſcale, and the county was beautified by a multitude of clumps, belts, and plantations. The noblemen and gentlemen very zealouſly concurred in promoting meaſures ſo conducive to their own advantage and to the general intereſt of their country. The demand for cheeſe and butter to ſupply the multiplying wants of Glaſgow, Paiſley, Greenock, and Port-Glaſgow, led to increaſing care reſpecting milch-cows and dairies. The Engliſh market afforded ready ſale for black cattle; and the growing manufactures of the country introduced the benefits of opulence.

Theſe concurring circumſtances gave riſe to private or county banks and paper circulation; and by their means the landholders,

landholders, whoſe ſecurity was good, but who were in general deſtitute of ready money, were enabled to diſcount bills, procure caſh accompts, and eſtabliſh other modes of credit for the improvement of their eſtates. At the ſame time, induſtrious tenants, joining together as ſecurities for each other, were accommodated with money to ſtock and cultivate their farms. Whatever diſadvantages may reſult from an overſtrained circulation of paper currency, or incautious extenſion of credit; yet, in this inſtance, the effects of ſuch pecuniary accommodations were truely beneficial. In a very ſhort time, good turnpike roads were completed in every direction; wheel-carriages were gradually introduced; coallieries and lime quarries were opened; draw-kilns erected; almoſt every field was divided by hedge and ditch; good farm-houſes were conſtructed; ſown graſſes prevailed; the breed of animals was improved; the loweſt claſs of people were enabled to live better, by the introduction and general uſe of potatoes. The ſeat of every conſiderable perſon was ornamented with planting, and his fields improved; and there hardly remained a proprietor, of any condition whatever, who did not, in ſome form or other, promote the intereſting work of cultivation.

Great as theſe advantages appear, they were inadequate to produce the ſuperior benefits which the county has attained. It is to be obſerved, that, notwithſtanding the advancement already mentioned, agriculture remained almoſt without a beacon or directory to guide its courſe, or ſpecify its progreſs. Much advantage had indeed been derived from imitating the better practice of Eaſt-Lothian, and ſome of the well managed provinces in England. But the mode of agriculture, eſtabliſhed in theſe places, preſuppoſed ſkill and induſtry in the labourer, ſtock and knowledge in the farmer, and a regulated cultivation; without which, the beſt bleſſings of ſoil and climate will prove unavailing. Beſides, the indiſcriminate adoption of plans and ſyſtems, formed for other diſtricts, ſoils, and climates, was liable to infinite objections. For example, the ingenious Secretary of your Board main-

tains, that the only mode, by which a ſcientific or ſucceſsful huſbandry can any where be eſtabliſhed, is by granting extenſive farms to opulent and ſkillful tenants. But, in the preſent inſtance, this became impracticable; becauſe, without alluding to the neceſſary portion of induſtry and ſkill, few tenants had ſtock and implements ſufficient for 80 or 100 acres. —It is farther to be obſerved, that, in a ſoil and climate where ploughing, ſowing, reaping, and ſtacking corn, are liable to conſtant interruptions; it is hardly poſſible for any farmer to manage, without loſs, a large quantity of land in tillage; and, at any rate, it tends to diminiſh the number of farmers and their families, ſubſtituting hinds and cottagers, and labouring ſervants in their place *.

When the practice of winter-ploughing, ſo prevalent in dryer climates and in lighter ſoils, was attempted on the deep and tilly parts of Ayrſhire, the land was ſo drenched as to yield a ſcanty produce. In like manner, numberleſs improvers loſt their crops by ſowing early, in imitation of their ſouthern neighbours; and many a field of clay, by ſummer fallowing in a rainy ſeaſon, was rendered only fit to be converted into brick or mortar. When the high and crooked ridges were attempted to be cleaved and levelled, the productive ſoil was buried, and a ſterile till was thrown upon the ſurface; which, having been excluded from the air, and unmixed with any animal or vegetable ſubſtance, required a long courſe of ploughing, manure, and expoſure to the atmoſphere, before it could afford the pabulum of vegetation: Inſomuch, that the tract of old ridges is frequently marked with barrenneſs, at this day, in fields, which, after being levelled, have for 20 years undergone a ſucceſſive courſe of cultivation.—In ſhort, when any perſon, implicitly adopting the management of

* Pliny's opinion on this ſubject is expreſſed in the following words: "Modum agri in primis ſervandum, antiqui putavere. Quippe ita cenſe-"bant, ſatius eſſe minus ſerere et melius arare."—And Virgil ſays,

"Laudato ingentia rura
"Exiguum colito."

of other counties, laid no other limitations upon his tenants than ſuch as were adapted to places, where the land was already dreſſed anddrained, the ſoil and climate dry, and a proper rotation of crops eſtabliſhed; he was invariably diſappointed in his object; and the farm, at the mercy of unreſtrained and unſkilful tillage, became little better than a caput mortuum.

In this ſituation the wiſeſt cultivator around Ghent, Bruges, or Aloſt, would have found himſelf perplexed. His endeavours to lay the land clean, and dry, by ſtraight furrows, well-proportioned ridges, and frequent drills, would have been fruſtrated, or at beſt have proved a tedious and expenſive undertaking, in a country where the ridges were high, crooked, full of ſtones and baulks; where every furrow was like a ditch, and every head-ridge a mound to prevent the outlet of the water.

Had he brought the beſt ploughmen from Norfolk, who, at home, with two horſes, will work near two acres daily, he would have found them ſoon conform to the Ayrſhire complement of 3 roods; while the native labourer would have learned from his inſtructors, to refuſe employment on any other work. In vain would he have attempted to ſave his land from poaching, and to increaſe manure by feeding every animal upon the farm within doors, as is the practice of the Netherlands. It would have required years before he could get into a courſe of clover, ſainfoin, vetches, tares, and lucerne, for ſummer feeding; and into cole, cabbage, carrots, turnips, rape, and oilcakes for winter. And, after all, he would have found neither ſhed nor ſtraw-yard on the farm, in which his ſtock could be accommodated,

Under theſe difficulties, it was fortunate for the county, that a gentleman of conſiderable property, united with great abilities and obſervation, (Mr Fairly of Fairly), devoted his attention to the gradual correction of abuſes, which no power or influence could at once aboliſh. Knowing the imperfect nature of the inſtruments he had to work with, he determined to proceed by a leſs rapid, but more certain, opera-

r remarks and additional observations.

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divided by ſufficient fences into three or more parts, ar
allowed to remain in graſs, till it recovered from the ex
ing courſe of evil management already ſtated. About 10
of ſlacked lime were ſpread upon the ſward of each
A convenient houſe and offices were completed, and i
condition, it was ready for a tenant.

But, in order to preſerve the benefits ſo tediouſly ar
penſively acquired, the moſt pointed limitations were
ſary; not only to prevent the farmer from reducing hi
by bad management, to its former wretched ſituation,
enforce a rational ſyſtem of amendment.

The leaſe was uſually granted for 18 years; and the
nants obliged the tenant, not to plough more than one
of the farm in any one year, nor to plough the ſame
more than three years ſucceſſively. With the third cro
tenant was bound to ſow 3 buſhels of rye-graſs, and 12
clover. To cut it for hay only one year, and paſture
fore the ſame could be ploughed again. The tenan
bound to keep the houſes in repair, to maintain the gat
fences; and in caſe of failure, the landlord might empl
bourers, and charge the amount with the next year's
The fodder was ſtipulated to be conſumed upon the gr
and all the manure to be ſpread upon it Heavy addi
rents were ſpecified for every acre ploughed beyond the
tation: And theſe rents were not in the form of pen
but as a compenſation for the very ſerious loſs of value i
red by cropping the ground beyond the periods admitt
the leaſe.

In confirmation of theſe remarks, it is to be obſerved,
the ſame ground which in paſture yields 20s. per acre, i
quently worth L. 5 or L. 6 per acre, annually for 3
plough

* The Ayrſhire boll of lime contains 4 Winchester buſhels, coſting, draw kill, from 3d. to 5d. and 6d. per boll.

ploughing. It is not ſurpriſing, therefore, that any attempts to invalidate the courſe of ſuch covenants by appealing againſt the right of landlords to impoſe limitations on their tenants, ſhould have excited the ſtrongeſt feelings of alarm, and occaſioned impreſſions of poſitive wrong on the minds of all perſons, connected with the landed intereſt, whoſe properties might be injured to the amount of many hundreds per cent, and reduced to their ancient ſterility, if the courts of juſtice were to ceaſe ſupporting theſe covenants.

Under the regulations ſpecified by Mr Fairlie, there never could be more than one third of the farm in crop; and no land could be ploughed till it had lain ſix years in graſs. The produce on one third of the farm ſo ploughed, was uſually double or triple that which the whole yielded under the old management of croft and out-field land. The remaining two thirds being ſown down with all the lime, dung, and manure, that could be collected, afforded a ſupply of hay and graſs, more valuable than the whole produce of the farm under the antient ſyſtem.—Thoſe farmers, who perſiſted in raiſing three ſucceſſive crops of oats, undoubtedly, ſcourged the land as much as could be done in three years, or as could well be recovered by ſix years of reſt under ſown graſs. But many farmers had ſenſe enough to take beans and peaſe as the ſecond crop, and to ſow big or barley, and graſs ſeeds for the third; by which means, the land has been brought into a condition capable of yielding crops hardly equalled, and certainly not ſurpaſſed in any part of Great Britain. The ſame Gentleman, having fortunately undertaken the ſuperintendance of the eſtates of the preſent Earl of Eglintoun, and applied his ſyſtem to the management of that extenſive property; in the ſpace of little more than 20 years, has eſtabliſhed a reformation ſo complete, that it is univerſally adopted almoſt on every arable eſtate in Ayrſhire. The conſequences are, abundant crops of grain; plentiful returns of hay; and the fineſt paſture where little or no paſture grew before. Indeed, the principle of not allowing more than 3 ſucceſſive

crops to be taken off the ſame field, without reſt or intervening fallow, and of ſowing graſs ſeeds along with the third and laſt crop, is ſo completely eſtabliſhed; that the tenant attempting to depart from that courſe, without ſtipulation, would be held, by the judicial country courts, as acting wrongfully to the proprietor, and an interdict would be obtained againſt him, on the principle that he was deviating from the uſage of the country, to the detriment of the proprietor, who is underſtood to let the uſe but not the abuſe of the land.

The diviſion of property, as has been already ſtated, is extremely various; and the different circumſtances, reſpecting its extent and diſtribution, are expreſſed in a column annexed to the map which accompanies this paper.

A great proportion of the landed eſtates have changed their owners in conſequence of individual extravagance, expenſive engagements, and the diſtreſſes occaſioned by the failure of the Ayr bank in the year 1772.

The run-ridge and mingled property, is now almoſt entirely divided, and unleſs around ſome burghs and villages; and, in a few other inſtances, there are no common lands in the county *.

The

* There are three tenures of land in this county, which, from their uncommonneſs, deſerve to be recorded. The firſt is of the Lands of Prieſtwick, on the coaſt of Coil, erected into a burgh by very antient charters; under the direction of a chancellor, baillies, and other borough officers. There are about 1000 acres of land divided among 36 freemen, or barons as they are called. Each poſſeſſes a lot of arable ground, and a right of paſturing a ſpecified number of ſheep and cattle on the common. The lots do not remain in perpetuity with any one poſſeſſor, but are appropriated from time to time by drawing for them at the end of a certain number of years; and no freeman can ſell his property without conſent of the corporation.

The next tenure, is that of Newton upon Ayr, very accurately deſcribed by the Rev. Mr Peebles, in his Statiſtical Report of that pariſh, already publiſhed. The property belonging to the community contains about 200 arable acres, divided among 48 freemen, and 150 acres in common among them.

The proprietors are unacquainted with many obſtacles to improvement, which exiſt in the ſouthern part of the iſland. The land-tax, together with converſion of ſtatute labour for repairing of roads, miniſter's ſtipend, and ſalaries to ſchool-maſters, are the only aſſeſſments to which the lands are ſubjected. Theſe are uſually made payable by the tenant, over and above the rent ſpecified in his leaſe; and ſeldom amount to more than 2 or 3 per cent, of the actual rent.

The light ſandy links, and downs along the ſhore, being unfit for tillage, ought either to be planted, or let in rabbit warren, which yields near 10s. per acre, while it is hardly worth 5s. for paſture. The flat and arable parts ought to be covered with 200 or 300 cart loads of clay; and the practice of folding or ſlaking ſheep on turnips as a preparative for barley and graſs-ſeeds, is found an eligible ſyſtem *. Potatoes, and

The laſt, and moſt remarkable, conſiſts of 240 acres of rich land, held by 40 perſons in lots of 6 acres each, adjoining to Kilmaurs, (which was erected into a burgh of barony by King James V.) under a charter granted by the Earl of Glencairn 1577; the holders paying at the rate of 2 merks for each 40th part. By this charter, the Earl of Glencairn binds himſelf to allow no articles of manufacture to be made on the eſtate, nor any article of produce to be ſold, excepting in the ſaid burgh of barony. His object undoubtedly was by theſe reſtrictive grants and privileges, to allure ingenious tradeſmen to the burgh of Kilmaurs. But his intentions were fruſtrated; for the tradeſmen ſo eſtabliſhed, and their deſcendants, have generally forſaken the buſineſs of handicraft, and employed themſelves in cultivating their reſpective lots, which ſtill continue run-ridge. On this land, for many years, were raiſed plants of Scotch kail, ſo valuable that great part of Scotland was ſupplied with them; but in no other reſpect has either agriculture or manufacture benefited by theſe three inſtitutions.

The particulars of this charter, and the ſtrange tenure in queſtion, are accurately ſtated by the Rev. Mr Millar in his excellent Statiſtical account of the pariſh of Kilmaurs.

* This ſyſtem has not only been found extremely beneficial in many parts of England, but is recommended by the beſt farmers of antiquity.—"Ubi ſementim facturus eris, ibi oves delectato, et frondem uſque ad pabula matura." CAT. Cap. 30.——And Pliny ſays, "Sunt qui optime ſtercorari putent, ſub "Dio, retibus incluſa pecorum manſione." PLIN. Nat. Hiſt. lib. 18.

and all the kinds of Scotch kail, or curled greens, alſo ſucceed extremely well. Theſe lands under ſuch management, are worth from 10s. to 20s. per acre, according to the ſtaple of the ſoil. The better quality of ſtrong clays, are generally let from 20s. to 30s. per acre; and loams, or rich gravel, from 30s. to 40s.

On theſe ſoils, it is no unuſual circumſtance to raiſe 10 or 12 Wincheſter quarters of oats; 6 and 8 quarters of big or barley, and as much of beans, for which the ſoil of Ayrſhire is in many places admirably adapted; although the wetneſs of the harveſts renders it difficult to dry them. But this is in a great meaſure obviated by letting them remain till they become black and dry before they are cut. Beans are found to ſucceed well on lay; and it will be fortunate for the county, if the practice of uſing them, as an interveening crop between oats and barley ſhall become more general. Many farmers approve of ſowing peaſe along with beans, which cover the land more completely; but it muſt be the late kind of peaſe, otherwiſe they will not ripen with the beans.

Peaſe alone, though ſometimes a productive crop in this county, are extremely troubleſome to dry, occaſioned by the wetneſs of the climate; neither do they uſually yield more per acre than 5 or 6 bolls of four Wincheſter buſhels each, worth about one guinea per boll.

There are not yet above a ſcore of common farmers in the county who are in the practice of raiſing turnips. Their crops, however, prove extremely luxuriant, and ſeveral of them have adopted the beſt mode yet extant of uſing turnips, namely, to draw every alternate turnip, and feed cattle with them in the houſe; to fold ſheep and young ſtock on the remainder; and whenever a turnip is broken or ſpoiling, to draw it for the ſtall-fed cattle. By theſe means, the whole produce is turned to account; whereas in other places the fineſt crops are frequently deſtroyed in rainy ſeaſons, for want of common care and ſkill.

Wheat is not a crop in general practice; but thoſe who raiſe it, whenever they take pains to clean their land have

good returns, uſually from 4 to 6 Wincheſter quarters per acre. The red wheat is often ſown, although the fine early Eſſex, Hertford, or Suffolk ſeed-wheat is preferable. But unleſs the grain be ſteeped in brine, we find it apt to blight and blacken. The wheat raiſed in Ayrſhire is of an excellent quality, often weighing from 60 to 63 lb. per buſhel; yet the cultivation of this grain is liable to great objection. The ſummers are frequently ſo wet, and the harveſt ſo late and ſtormy, that a large tract of land cannot properly be prepared for wheat, without a greater power of men and horſes, than belongs to ordinary farmers. If ever it ſucceeds on an extenſive ſcale, it muſt be after clover; the land having been previouſly enriched and cleaned with turnips, followed by barley, which, when good in this country, never fail to enſure a fine ſucceeding crop.

Of all the rotations hitherto diſcovered, the beſt for Ayrſhire appears to be from lay, oats, or beans*. After theſe, in dry ſoils, turnips or other green crops, ſuch as kail, vetches, tares, and potatoes.——In very ſtrong ſoils drilled beans, cabbages, and carrots, may be ſubſtituted in the place of turnips. Theſe followed by a crop of barley ſown with graſs-ſeeds. After the clover, wheat, or oats, and in very light lands, rye. By this mode, it is preſumed, that wheat may be cultivated on a large ſcale with advantage. For if the harveſt prove ſo wet, that the intended portion of land cannot be ſown with winter wheat, it only requires ſowing a larger quantity of oats or ſpring wheat, and ſtill continuing the ſame rotation.

The culture of potatoes is ſo univerſally eſtabliſhed in every part of this county, that the pooreſt labourers, and the moſt extenſive farmers, raiſe a ſufficiency for their own conſumption. It is obſerved, that ſo far from exhauſting the land, potatoes, when luxuriant, are ſure to be ſucceeded by an abundant crop. Various kinds of them are cultivated; but the

* Beans, on old reſted lay, frequently yield 6 Wincheſter quarters per acre; worth about 32s. per quarter.

round red and theround white of a dry nature are preferred, both for taſte and produce. They are generally ſold for 6d per peck, weighing 36 lb. or 8 ſhillings per boll of 16 pecks; and the value of L. 16 or L. 20, is not unfrequently gathered off an acre. In ſhort, of all the benefits, the lower claſſes of the community have acquired within the preſent century in this county, the general cultivation of potatoes is probably the moſt important. Lazy beds are almoſt entirely laid aſide; and the potatoes are planted in the month of June, on land prepared by the plough, manured and drilled like other green crops, and are lifted before there be danger of the froſt deſtroying them *.

The Ayrſhire farmers very frequently prefer big to barley. The average weight of the former is only 48 lb. per Wincheſter buſhel; while the latter is eſtimated at 52 lb. per buſhel. But the big, having four rows inſtead of two, is more productive, and is likewiſe hardier and quicker in its vegetation; ſo that it may be later ſown. This often proves a material advantage in ſuch a climate, where the land for barley can ſeldom be prepared before the month of May; although it is thereby prevented from ripening till the beginning of September, which interferes with the oat harveſt. Beſides, till of late, the maltſters did not allow a price adequate to the difference of value between big and barley. But now, when barley ſells at 25s. per quarter, big may be had 4 or 5 ſhillings cheaper; although it is difficult to diſcover any difference in the ale brewed from theſe ſorts of grain.

With reſpect to oats, which form the great ſtaple of proviſions in the county, it may ſafely be aſſerted, that, in point of quality

* The prejudices againſt potatoes have been found in many places almoſt unconquerable. An idea of their being a ſpecies of ſolanum, and conſequently unwholſome, prevented their cultivation in Italy. And in France they were reckoned by the common people only fit for ſwine; until the celebrated Comptroller General, Mr Turgot, exerted his influence, and introduced them while Intendant of Limoges, by ordering diſhes of them in different forms to be regularly ſerved at his own table every day.

quality and produce, no county in the kingdom ſurpaſſes Ayrſhire. Thoſe produced from lay are of the beſt and moſt farinacious quality. The ſecond crop is uſually better than the third. This grain being extremely impoveriſhing, farmers ought to learn that two crops of it ſhould never be taken ſucceſſively from any field.—The time of ſowing is uſually from the middle to the end of March *.

Much pains are taken to procure the beſt qualities of ſeed. The old kind of ſmall grey Scotch oats did not yield much farina. The Dutch and Poliſh oats, although they ripen near a fortnight earlier than the common ſorts, are extremely apt to ſhake with heavy winds; and are, beſides, much thicker in the huſks than the oats now cultivated in this county. Theſe were originally raiſed on a bleak farm in Berwickſhire called Blainſley, cleaned with great care, and ſold for ſeed all over Scotland. They do not ripen very early; and the oat harveſt ſeldom commences ſooner than September, and does not finiſh before October.

The average weight is 36 lb. per buſhel, which will produce meal at the rate of 18 pecks per Wincheſter quarter, —each peck of meal weighing 8 lb. 10 oz. Engliſh weight, at 16 oz. per pound. Upon the rich warm lands near the coaſt, no leſs than 22 pecks of meal have been produced from a quarter of oats. Farther up the country, the proportion will hardly exceed 16 pecks from 1 quarter of oats; and, in bad ſeaſons, on the bleak parts of the moors, there will hardly be a return of 14 pecks of meal from a quarter of oats.

No fact can more clearly ſhew the abſurdity of ſelling grain by meaſure inſtead of weight. For it is obvious, that a quar-

 ter

* The uſual rule in better climates, is to ſow the cold wet lands early, reſerving the warm dry bottoms till the laſt of the ſeedtime. Cato ſays, "Ubi quiſque locus frigidiſſimus, aquoſiſſimuſque erit, ibi primum ſerito. "In calidiſſimis locis, ſementim poſtremum fieri oportet." CATO Cap. 34. —Whoever adopts this advice in Ayrſhire is ſure, in a wet ſeedtime, to impair his crop. For, in this country, we muſt follow Pliny's rule, Never to touch land when wet—"Lutoſam terram ne tangito." PLIN. Nat. Hiſt. lib. 18.

ter of oats, yielding 21 pecks of meal, is exactly worth 1½ quarter, yielding only 14 pecks of meal. This I took the liberty of ſuggeſting to a member of the Privy Council, when the late corn bill was in agitation; and accompanied the ſtatement with many obſervations on the ſubject, from an ingenious friend of mine, very deeply converſant in the corn trade. The good ſenſe, however, of the Ayrſhire farmers has at laſt adjuſted this buſineſs, as well as could have been accompliſhed by the wiſeſt legiſlative regulation. And now, bargains of grain are uſually taken at a ſpecified average weight, namely, at 36 lib. per buſhel of oats, or 18 pecks of meal per quarter. When the grain weighs leſs, there is a diminution in the price, at the rate of 6d. in the boll, for every pound of meal defaulting. If gentlemen in different parts of England eſſay their oats, they will find them ſeldom equal to this average; and the oats from Ireland, imported into Ayr, Irvine, and Saltcoats, are commonly ſold 1s. or 1s. 6d. per quarter cheaper than Ayrſhire oats *.

In a climate ſuch as this, when ſeedtime and harveſt are conſtantly too late, ſeveral weeks might be gained by chipping or ſteeping the ſeed in moiſture, and then covering it up under cloths or ſacks in a barn or other warm place, for a few days, till it buds: By which means there will be the double advantage of proving the quality of the ſeed before it be ſown, and of obtaining ſeveral weeks in its time of ripening. This mode is very generally practiſed in ſeveral parts of Ruſſia †; and I have known it with advantage applied to ſome kinds of grain

* The average price of oats in Ayrſhire is about 16s. per Wincheſter quarter, or 1s. per peck of meal. When meal is lower, farmers can hardly pay their rents, and when much dearer, the poor are oppreſſed.

† In Ruſſia the Guinea or Indian corn is raiſed by this mode, and might, I doubt not, be brought to ſufficient perfection in this climate, to act at leaſt as a green crop, affording the fineſt of all green feeding for cattle. I have raiſed it to its full ſize in the open ground at this place; and it only requires, like potatoes, and other delicate productions of warm climates, not to be planted out while there is riſk of froſt.

grain and graſs-ſeeds. Barley being a ſeed that very readily ſprouts, and is uſually ſown in warm weather, will perhaps gain leſs by this practice, than beans, peaſe, oats, and other ſpring corn; and as for winter corn, the experiment would be prepoſterous.

There is perhaps no county in the kingdom where the farmers are ſo handy and expert in reaping and managing their corns in rainy weather. The oats and barley are uſually cut for 5 s. per Scots acre, and put in ſhocks for 1s. more. The ſtubble is cut extremely ſhort, and no corn is left to encourage gleaners and other pilferers. Beſides the uſual complement of farm ſervants, an additional number are engaged for the harveſt, or the whole may be contracted for at a certain rate per acre. Even in the moſt humid ſeaſons it is extremely rare to find any corn loſt, or much damaged; for the farmers are conſtantly turning and curing it, ſo as to prevent its rotting, even when the rains continue ſo ſevere for many weeks, as to render it impoſſible to take in the corn. When thoroughly dried, it is put up in ſtacks, containing each from 10 to 20 quarters. One of theſe is thrown into the barn, and threſhed out as occaſion may require *. Clean oats growing on clay and ſoil free from weeds, may be threſhed, and the ſtraw truſſed up for 10d. per quarter. But oats on foul and graſſy ſoils are dearer. The uſual practice, however, is, to employ the farm ſervants in winter mornings to threſh from 5 to 8; when they rub down their horſes, and go to out-door work.

The uſeful invention of a threſhing machine has already been introduced into the county, and is found of ſuperior utility. The principle upon which this mill performs, is by two cylinders

* The *Birley-men*, or appraiſers, are ſo expert in their valuation of corn in the ſhock, that on a field of 50 acres, they will eſtimate the produce within a few buſhels. They caſt and threſh every 20th or 40th ſheaf, which gives them the average of the whole.——On the ſame principle, an attentive farmer, when he ſtacks his corn, ought to note the number of ſheafs, and prove them in a ſimilar mode.

By theſe means he can exactly know the amount of grain contained in every ſtack, and prevent the poſſibility of impoſition.

cylinders or rollers turning quickly, and ſo placed, as to let all the ſtraw paſs through, and ſtrip it from the grain. One of theſe machines to work with two horſes, may be erected for L. 30 or L. 40 *. It requires the attendance of three men, and will threſh 3 quarters of oats per hour ſo clean, that not one grain of corn remains upon the ſtalk. It enables a farmer to ſupply an unexpected demand, and to prevent the continual depradations to which every farmer is expoſed, when a number of labourers have conſtant acceſs to his barn.

Multures or ſervitudes to particular milns are in general abolished; and with a few exceptions, every farmer takes his grain to the miller who ſerves him beſt. In ſome parts of the county, however, a contrary practice ſtill prevails. The uſual price for drying and grinding, is 6d. per quarter of oats. Drying, ſteeping, and malting barley, 2s. And wheat is milled for 2s. per quarter.

With reſpect to the culture and management of hay, notwithſtanding the great quantities raiſed in all parts of the county, the whole ſyſtem is ſtill deficient. Inſtead of ſowing 12 lb. weight per acre of the beſt red clover, 6 lb. of white or Dutch, and 4 lb. of yellow clover, with ſome plantain and other meadow graſſes; it is uſual to ſow no more than 6 or 7 lb. of red clover, along with 1 or 2 buſhels of ill choſen rye-graſs, the greateſt part of which is only an annual plant; although there be perennial rye-graſs of ſuperior quality; and all kinds of rye-graſs are conſidered as a ſcourging crop.

It often happens, indeed, that the ſeed-merchants impoſe a weed called gooſe graſs on the farmers, and thus the fields are poiſoned and impoveriſhed. The clover is ſeldom ſown equal, but only with one caſt of ſeed to a ridge, and the furrows being frequently wet; it is not uſual to find a ſtrong and regular crop of clover among ordinary tenants.

Graſs

* It may alſo be worked by water, when there is a proper fall, or power at hand.

Graſs meant to be preſerved for hay is almoſt conſtantly allowed to ſtand ſo long that the ſeeds are formed and the juices dried. This exhauſts the land, deprives the hay of nutriment, and throws the hay harveſt ſo late, that the autumnal rains commonly take place before it be concluded. The conſequences are, great expence in the working, turning, and coiling, and drying it after a ſucceſſion of ſhowers, till the whole juice and ſubſtance is exhauſted; and at laſt, it is frequently ſtacked in a ſtate fit for nothing but litter.

The uſual prices are 4d. per ſtone for ſown-graſs-hay in the rick, and 6d. for old hay. Notwithſtanding theſe remarks, 200 or 300 ſtone per acre, is not an unuſual crop.

Much improvement might alſo be made for the purpoſes of paſture by proper attention to cultivate the moſt valuable meadow graſſes, ſuch as, timothy, feſcue, plantain, and many others ſuited to the different ſoils. It is even not improbable that the Guinea graſs, although the native of a very warm country, might be brought to aſſimilate with this ſoil and climate. At preſent, the ſeeds and roots of the worſt kinds of graſs and weeds, are ſo predominant throughout the county, that they choak the more valuable ſorts when ſown. This evil can hardly be eradicated till drills, fallows, and green crops, become an eſtabliſhed part of the ſyſtem; and rotation of huſbandry in every farm *. Neither has it been poſſible, for any farmer in the county, to extirpate ſprits and ruſhes. When once rooted in the land, they are ſo continually nouriſhed by the moiſture of the climate, as well as the congenial nature of the ſoil, and their fibres are underſtood to be of ſo unperiſhable a texture; that after repeated drainings

* The Romans were in uſe to fallow every alternate year, and reckoned *terra reſtibilis*, or ground which could bear crops every year extremely uncommon, and chiefly confined to the rich territory of Campania. On the other hand the Chineſe never allow any land to remain in fallow or in paſture. See Voyages d'un Philoſophe, par Le Poivre. How would a Chineſe be confounded, ſays this author, if he beheld our waſtes, and downs and commons; our ill-dreſſed ridges, uſeleſs fallows, and bare fields!

ings, and fallowings, they have ſprung in full vigour as ſoon as the ground returned to graſs *.

The paſture in this county, however, is growing richer and better every day. White clover grows ſpontaneouſly. The ground has a natural tendency to the production of graſs; and there is little doubt of its rivalling the beſt cloſes of Cheſhire or of Yorkſhire, as ſoon as the land is dry; the cattle reſtrained from poaching it in Winter; and the practice of top-dreſſing paſture fields with dung, ſea-weed, lime and compoſt generally introduced. At preſent, graſs lands let, in the more cultivated parts, from 15 to 30s. per acre. On the bare unimproved clay ſoils, from 5 to 10s. while the hills and moors remain in their primitive ſterility; and probably, do not average more than 1s. or 1s. 6d. per acre.

The actual ſtate of tillage or mode of working the land, forms the next object of attention. The ridges ſtill continue in many places, very high and broad; the furrows being often 20, 30, and 40 feet aſunder. In order to correct the evils of high ridges, without incurring the detriment of burying the good ſoil, and expoſing an unfertile one; an ingenious gentleman of great landed property †, propoſes a method founded on the ſimple principle of reducing the loweſt part to a level. With this view, he throws off the top ſoil with a ſpade from about 6 feet at the end of a ridge, extending the whole breath acroſs the ridge. He then proceeds to throw the top ſoil, from the next 6 feet upon the ſurface ſo levelled; and advances with this ſort of trenching till the whole field is reduced, keeping the productive ſoil at top, and making the proceſs perform the purpoſe of a regular trenching, equal in reſpect of pulveriſing to 4 or 5 ploughings, and effected for 40s.

or

* The antient georgical writers, particularly Columella, Pliny, and Palladius, all concur in repreſenting ruſhes and other plants of a ſimilar nature, as indications of a fertile ſoil.——Col. lib. ii. cap. 11. Plin. Nat. Hiſt. lib. 18. cap. 6. Pal. lib. 1. tit. 5.

† Mr Ferguſon of Pitfour, Member for Aberdeenſhire.

or 50s. per acre. A more ſimple, cheap, and efficacious operation, can hardly be imagined; and no county can poſſibly ſtand more in need of ſuch a practice than the one in queſtion.

Indeed, it long has been a doubt, whether the ſyſtem of working land by ſpading and trenching, ſo as to bring every field to a more pulverized ſtate by the labour of man, to the excluſion of animals, is not one of the greateſt improvements which can occur in any country. Without preſuming to pronounce upon a point ſo often agitated, it is obvious, that the land by ſuch a proceſs is completely cleaned, freed from ſtones, levelled, and pulverized. That the produce of garden ſtuffs, green crops, grain, and graſs, is thus rendered far ſuperior to the ordinary mode by tillage; that beſides the advantage of employing the human ſpecies in place of the brute creation, the expence is little different. For example, to plough or fallow a field five times, with two horſes and a driver, coſts in Ayrſhire between 30s. and 40s. per acre. To half trench an acre, with one ſpading and a ſhoveling, will coſt about the ſame money; and a double trenching, with two ſpadings and two ſhovelings, in ordinary ſoil does not exceed 50s. or L. 3 per acre.

The return from ſuch management is truly ſurpriſing.—Acres ſo worked have been known to yield above 60 bolls of potatoes each; and a farmer near Grougar and Kilmarnock, a few years ago, on land prepared with double trenching, raiſed a crop of wheat, for which he received L. 19 per acre.

A ſtill larger produce has frequently been raiſed on deep rich land, prepared with double trenching, and planted with the round hard-headed Scotch cabbage, and rows of beans between the intervals. But theſe inſtances cannot occur unleſs when the ground is well manured, and great attention beſtowed on procuring ſeed of the beſt quality, and plants in full vigour; as there is probably no part of farming in which more loſs acrues from indolence and ignorance, than in the careleſs choice of ſeed, and ſelection of plants.

But to return to ploughing.—Every rational farmer in this county, is ſenſible, at laſt, of the advantages derived from ſtraight furrows,—the ridges juſt ſloping ſufficiently to direct the water to the furrows, and not more than 12 feet wide. By this proportion, the field is laid entirely dry; the ridge may be ſown at two caſtings, reaped with two ſickles a-breaſt, and mowed with one ſcythe at two turns.

In this county, as in ſeveral others, the modes of ploughing are various, and in many caſes exceptionable.—In light eaſy ſoils, devoid of ſtones, like different parts of Norfolk, the art of ploughing is ſo ſimple, that it may be performed almoſt in any way, and effected by a plough of any common conſtruction. But, when the light, broad bottomed Norfolk plough, is uſed in the ſtiff ſtoney ſoils of Ayrſhire, the work is moſt imperfectly performed. The object in this county is to make a furrow from 4 to 6 inches deep, according to the nature of the ſoil. In order to lay that furrow neatly up, ſhouldering to the next, it is neceſſary that the flake or furrow be at leaſt one third wider than its depth. If it were only as broad as deep, it would be exactly a ſquare; and the furrow, turned over, would juſt fill up the ſpace left by the preceding flake.

The art of ploughing, perhaps, requires a nicer eye, ſteadier hands, and more attention—than any other occupation; and yet, without fixed principles or rules of any kind, the moſt ignorant perſons are truſted with a plough; although the difference of one man's ploughing and another's ſhall make the odds of 2 or 3 quarters produce per acre, on the ſame land: For it is obvious, that land unequally and irregularly ploughed, with flat, ſhallow, broad flakes, laid over on their backs, never can produce ſo well as when the furrows are taken deeper, narrower, and ſhouldered up againſt each other. By which means, there are more numerous intervals proper to receive the ſeed; and it is alſo better covered with the ſoil, protected from the bleaching rains and ſcorching heats, and enabled ſooner to fulfil the purpoſes of vegetation.

We are, however, extremely inattentive to clean the lands

from root-weeds, couch-graſs, or quickens; and to deſtroy the multitude of annuals which continually ſpring in ſo wet a ſoil. Neither do we ſufficiently pulverize the land by harrows, brakes, and rollers; without which, the tender germs and ſeeds can find no proper nidus to call forth their vegetating powers.—By attending to theſe particulars, and clearing the field of all ſuperfluous moiſture, by the judicious formation of water furrows to take off the rains and ſprings; a good ploughman can eaſily compenſate for any additional wages his maſter can beſtow upon him: Inſomuch, that it would be better for a farmer to give a ſkilful Berwick or Eaſt-Lothian, or Clackmananſhire ploughman, double wages, rather than allow the land to be ploughed gratis in the old Ayrſhire form.

The more ordinary farmers ſtill continue the old Scotch plough; which, for breaking up coarſe land, and working ſtrong ſtony ſoils, is probably the beſt of all; but it is extremely heavy, and requires four horſes. In lighter and well cultivated ſoils, a ſmaller plough is uſed, and works eaſily with two horſes, and without a driver. This mode, it is preſumed will very ſoon become general in the county. The Ayrſhire ploughs, however, appear all too narrow in the bottom; by which it is more difficult to keep a ſtraight direction, and to ſhoulder up the ridge, than with a plough broader at bottom, and bluff at the mouldboard, thereby rendered ſteady in its progreſs, although not ſo proper for ſtrong ſtoney lands. Double mouldboards are uſed for drills and green crops; but the wheel ploughs do not prevail in any part of Ayrſhire *. Several attempts have been made to introduce caſt metal ploughs; but they appear much heavier, and in no reſpect ſuperior to thoſe of wood well ſhod with iron in the ordinary mode.

There is another point of equal conſequence in this county to which as yet no adequate attention has been ſhown.—

* A two horſe plough, of Mr Small's conſtruction, with an iron head, coſts two guineas; with a wooden head 30s. caſt-metal ploughs 40s.

The tenacious nature of the ſoil in many places, and the moiſture of the climate, expoſe it to conſtant inconveniencies from wetneſs. The extent of the evil has hitherto almoſt entirely precluded the application of a remedy. Covered ſtone drains are ſo expenſive, and in general ſo ineffectual, that they have juſtly fallen into diſrepute. To drain an acre of ground with ſtones and covered drains will coſt from L. 3 to L. 5 per acre; and after all, the ſlighteſt accident or impediment in any of the drains, will render them entirely uſeleſs.

Drains filled with bruſh-wood are extremely eligible for ſoft boggy lands, where there is a ſufficient declivity communicating with a main drain, to carry off the various ſtreamlets from the drains. They do not coſt more than 40s. or 50s. per acre, in the neighbourhood of bruſh-wood; but they ſeldom laſt beyond 14 or 15 years. And if the mouths of the drains are ever ſuffered to choak, they ceaſe to be of ſervice.

There is another kind of covered drains, leſs expenſive, and in certain ſoils more efficacious than the former. Firſt, a thick ſod is cut and laid aſide, then a trench is made gently ſhelving, and deep enough to be beyond the reach of any plough. A narrower ſpade is then uſed to caſt a ſmaller trench at bottom, leaving a ſhoulder or epaulement of ſeveral inches on each ſide. The earth is then carefully removed, and the top ſod is turned with the ſward downwards, preſſing on the epaulement, and leaving the narrow ſpace below it empty for the water. The earth ſcooped from the bottom is then thrown upon the inverted ſod, and the whole is levelled with the ſurface. Neat as this mode may be for dreſſing pleaſure grounds and parks, it is found inadequate to the great purpoſes of draining on an extenſive ſcale. In a county ſuch as Ayrſhire, this can only be effected by properly ridging and furrowing the land; opening with a ſpade or plough a proper water furrow, wherever it is neceſſary; and in wet or ſpouty ſoils uſing open cuts or kettle-bottom drains, about 5 feet wide at top, gently ſhelving ſo as to leave the ſides green, and no deeper than is requiſite to make the water flow. Theſe kettle-

bottom

bottom drains may be made from 4d to 6d per fall of ſix yards, and ought to be cleaned once or twice a year. They have been ſucceſsfully practiſed by Mr Blair of Blair in very wet parts of his eſtate.

The only kind of drain that hitherto has been generally eſtabliſhed, ariſes collaterally from the large deep ditches and fences which over-run Ayrſhire. When the ſyſtem of encloſing was introduced, every one conceived that the deeper and wider he made his ditch, and the higher he conſtructed his mound, the more ſecure and efficient was his fence. In this courſe of reaſoning, it was forgotten that the mound acted as a barrier againſt the water on one ſide, and the ditch as a canal or dam upon the other, whenever there was not a proper level or outlet for the water. The width is uſually 5 or 6 feet, and the depth three feet. The thorns are planted on a level with the ſurface, and uſually with a ſcarcement or projection of 5 or 6 inches; on this the thorns reſt, and it ſerves as an under ſtratum to them when cleaned, or when earth is thrown up to cover them. A fence, of this ſort, coſts at the rate of 10d. or 1s. per fall or perch of 6 yards in length. On the top of it, is placed a palliſadoe of bruſhwood, coſting, according to ſituation, from 2d. to 4d. per fall.

In Summer, this ditch or canal is dry, and ſo wide that the cattle can deſcend into the bottom, and deſtroy the thorns growing above the projecting earth or ſcarcement. In Winter, the quicks are uſually drowned with the ſtagnated water in the ditch, and although the Ayrſhire ſoil is generally favourable to theſe plants, ſo little attention is paid to them, that one may ride for many miles without ſeeing a hedge and ditch either properly conſtructed at bottom, cleaned above, cocked and palliſadoed at top, or ſwitched up like a penthouſe, which is the only mode of preſerving the fence, thick and vigorous from top to bottom.

Quicks are raiſed from hips and haws; and after ſtanding in the ſeed-bed, they are tranſplanted; and at three years old, are uſually ſold by the nurſery-men at 10s. per thouſand *.

Conſidering

* 34 quicks are ſufficient to plant a fall of 6 yards.

Conſidering the enormous ſums expended on encloſures in Ayrſhire, during the laſt 40 years, it is wonderful how few are either properly conſtructed, or afterwards preſerved in condition, to perform the three effects required of them:—The draining of the ground; the confining and ſeparating of the ſtock; and affording warmth and ſhelter to the country. This laſt object is ſo material, that an author of great eminence, on political economy *, expreſly ſtates the ſignal benefits derived in Italy, from the warmth and ſhelter of planting and encloſures. If this remark applies with juſtice to the mild latitudes of Lombardy and Naples; how much more forcibly muſt it attach to the bleak regions of the north?

The beſt mode of attaining theſe objects is, to conſtruct a mound or embankment, about 3 or 4 feet wide at bottom, and from 2 or 3 feet high, faced up with ſod, in order that it may be preſerved in conſtant verdure; with a quickſet hedge and row of trees upon the top, defended by pailing or bruſh-wood while the fence is young, and having a ſmall ſhelving drain on each ſide of the embankment. The earth being all taken from the ſurface, and well pulverized, gives much more luxuriant vegetation to the quicks and trees, than can be expected when they are plunged into the ſide of a cold hard mound, often drenched with water, and placed in an unnatural horizontal poſture. It is, however, to be obſerved, that theſe fences are by no means proper in very ſandy ground, where the drought would kill the plants †.——A mound and fence of this deſcription, including thorns at 10s. per thouſand, and a ſufficient quantity of oak, aſh, elm, beach ‡, and larch, at the rate of one tree per fall, and one Huntington willow per fall,—may be made for little more than

* Filangieri.—Scienza della Legiſlazione.

† In that caſe, furze, planted on a high mound or turf dyke, will be found an eligible ſubſtitute.

‡ The beech is above all recommended, and it agrees ſo well with the thorn, that it may be mingled with it in the hedge.

than an ordinary encloſure. It is particularly beautiful and convenient on the ſides of high roads, affording a perfect fence and ſome ſhelter; preſerving them dry without recurring to the pernicious cuſtom of deep ditches fronting the road, which endanger the neck of the traveller throughout every part of Ayrſhire.

With reſpect to roads, few counties, on the whole, are ſo well accommodated. In all directions, where land or water gravel can be procured, the roads are formed of theſe materials. The turnpike roads are made and repaired by the produce of the tolls; and croſs roads by the ſtatute labour of the different pariſhes. The uſual breadth is conformably to the ſtatutory regulations; being never leſs than 24 feet wide for by-roads, and 34 feet for turnpike roads. The materials are uſually a foot deep at the ſides, and 15 inches in the centre. When the turnpike roads firſt began in this county, the rate of making them, by job-work, roſe from 10s. to 14s. per fall. Now, they are contracted for at 5s. or 6s. per fall; unleſs where the materials are at a great diſtance.

In places where gravel cannot be procured, the road is formed with pounded ſtones; but as they are ſeldom properly covered with earth, nothing can be more uneaſy than the travelling on theſe ſharp and rugged communications; eſpecially in this county, where there are neither broad wheels, nor heavy waggons to reduce theſe refractory materials. The ingenious Mr Bakewell thinks that roads, inſtead of riſing in the center, and ſhelving outwards, ſhould be made like the ſtreets of Naples, high at the ſide, and tending to a kennel or gutter in the middle.

After all, there is little doubt but the beſt ſyſtem of road-making is that practiſed by the Romans in the Appian and Flaminian ways, and afterwards much improved, and rendered general in France under Sully and Colbert. The ſyſtem eſtabliſhed by theſe great miniſters conſiſted of a broad pavement in the middle, on which carts and heavy carriages can

always draw a greater load than on the gravelly paths on each ſide, which ſerved for travellers in dry weather.

The fact is, that in the neighbourhood of Glaſgow, where the roads are neither ſmooth nor flat, but where they are either paved, or compoſed of very hard materials, from 20 to 30 cwt. is drawn upon a cart with one horſe, whereas, on the flat gravel roads around London, the moſt powerful teams of four horſes hardly ever draw more than 40 cwt. equal to 1000 wt. or half a ton per horſe.

In Ayrſhire the practice of working with waggons, teams, or drays, has never been eſtabliſhed. Even the yoking of two horſes in one cart is diſapproved of; on this principle, that a ſingle horſe in a cart avoids the ſtrains and jerks, which ſo frequently diſtreſs the willing ones, while the others ſave themſelves. Beſides, this mode requires much leſs ſkill and attention in the driver, who can eaſily take charge of two horſes, and two carts.

The wheels of theſe carts are uſually from 48 to 54 inches in diameter*. The axles are made of iron, although many carters now prefer wooden axles, as being lighter, and ſhaking the horſes leſs. On the ſame wheels, occaſionally can be placed bodies of long carts for the conveyance of hay and ſtraw. The weights drawn in this county are uſually no more than from 10 to 12 cwt. Although the carriers who travel from Ayr to Edinburgh ſeldom take leſs than a ton on every ſingle horſe cart; and the very ſuperior practice, in the neighbourhood of Glaſgow, already mentioned ſufficiently proves what may

* A pair of ſuch wheels, made of well ſeaſoned aſh, will coſt for wood 24s. 12 ſtone of iron 50s. the body L. 1. Or for a complete mounted ſingle horſe cart, L. 5.

The wheels of carts, round London and in many level parts of France, are ſeldom leſs than ſix feet in diameter. By theſe means, the centre of the axle is three feet from the ground, and the cart placed on that axle is neceſſarily raiſed nearly a foot higher. The objections to theſe very high wheels are, their weight and ſeverity of preſſure going down hill.

may be effected. Great, however, is the amendment of the county in this reſpect.—About 40 years ago, the late Lord Cathcart being extremely deſirous of improving his eſtates, ordered a number of carts to be made, and given gratis to his tenants. But they were at that time ſo little accuſtomed to theſe machines, and the roads were ſo bad, that very few accepted of his Lordſhip's preſent.

In order to enforce the moſt uſeful improvements in the article of conveyance, and to ſpecify the weights that horſes draw, every farmer ought to have a machine capable of weighing two tons, with a platform on which the cart runs; and is weighed in the moſt expeditious manner.—Theſe machines are made by Mr Hutchiſon at Dalkeith, on an ingenious conſtruction. They are ſo poiſed, by counteracting levers under the platform, as to weigh horſes, cattle, ſheep, &c. with great preciſion, and without being injured by the movement of the animal. Few inventions are ſo uſeful to thoſe who buy and ſell live ſtock: as it enables them to avoid all impoſitions and altercations with graziers or other dealers, and to know, with very great preciſion, the value and real condition of the animals they purchaſe *.

In addition to the circumſtances above ſpecified, there is no operation which tends more to the beauty, comfort, and improvement of the country, than planting. In this particular, the landholders of Ayrſhire have not been inattentive.—Two centuries ago, there were very conſiderable foreſts in this county. At the time of the Reformation, a foreſt extended from the vicinity of Ayr to Barnwell, or the Kirk of the Foreſt, as it was then called, 10 miles eaſtward. This, and every other of any extent in the county, excepting Dalrymple wood on the river Doon, belonging to the Earl of Caſſilis, has been long ſince deſtroyed. Inſomuch, that, 50 years ago, there hardly remained any timber or plantations in the

* A complete machine of this ſort, capable of weighing two tons, coſts a-

county; excepting the natural woods of oak and birch on the banks of the rivers Stinchar, Girvan, Doon, and Ayr, and clumps of aſh and ſycamore ſurrounding almoſt every farm-houſe in the northern diviſion called Cunningham; and many of thoſe in the central and ſouthern diſtricts, Coil and Carrick.

It is to be hoped, that a ſimilar misfortune to the country will not again occur; as Mr Forſyth's diſcovery, and application of a plaiſter, for preſerving and reſtoring trees, enables every one to obtain new ſtems, and a moſt vigorous vegetation, from any root that is not totally decayed *.—At preſent, the ſeat of every gentleman in the county is ſurrounded with a greater or ſmaller quantity of planting, proportioned to his inclinations, taſte, and means.

Thoſe who wiſh to beautify or ſhelter a country, rendered ſo bleak by the miſconduct of their progenitors, found it requiſite to plant clumps of one or more acres, and belts of different dimenſions, from 20 to 300 feet.

In many places hedge-rows have been introduced, and ſucceed extremely well. But, in a bleak and hyberborean climate, they muſt be very frequent, and under the cover of well advanced plantations, before they can yield any ſolid benefit to the country. Whenever they ſhall become an eſtabliſhed part of the general ſyſtem, beſides affording ſhelter to the fields, they will in 40 years render an eſtate worth double the value of the ſoil, by the timber growing on it, without including the great convenience and abſolute neceſſity of ſtakes, pailing, and bruſhwood, afforded from the coppices, and younger growth of the plantations.

In order to effect ſo deſirable a purpoſe, the beſt mode practiſed in this county is to ſow, on a well prepared piece of garden ground, the ſeed of aſh, elm, and ſycamore, beech-maſt, acorns, and cones of larches, pines and fir, according to

* See Mr Forſyth's pamphet on this ſubject.

to the quantity of ground intended to be planted. The ordinary proportions requiſite to plant an acre are about 2000 deciduous trees, 1500 larches, and 1500 Scots firs. Round the boundary ſhould be planted cuttings of Huntington willow, which, in 4 years gives the ſhelter and appearance of an advanced plantation; and, in the end, yields a wood of great ſize, extremely light and tough, and almoſt as uſeful for country purpoſes as the aſh. If the ground be hard and moiſt, it is beſt to turn it previouſly with the plough, and then to plant the trees at 3 or four years old in the months of February or March. But on dry ſandy ſoils, the Scotch firs and larches ſhould be planted in November or December from the ſeed-bed at 2 years old. Acorns ſown or dibbled, thrive extremely well, unleſs when rabbits, mice, or hares deſtroy them.

Contractors in this county will engage to plant 5000 trees per acre at ſpecified ages, and to ſupply all deficiencies for 7 years at L 3 or L. 4, according to the ſoil and ſituation; the proprietor encloſing the ground, and affording ſome land for nurſery. But as moſt proprietors can do the ſame much cheaper by their own people, there are few examples of ſuch contracts having been made, to any extent in the county.

It is unfortunate, that in the early tendency to planting, the landholder ſhould have given ſo decided a preference to the bleak and diſmal Scotch fir. At its prime it never can be uſed with ſafety for rafters, beams, joiſts, or other durable operations in building; inſomuch, that the people of this county, rather chooſe to pay 16d. and 18d. per ſquare foot for Norway timber, than uſe the fir grown in Scotland of equal ſize, at 1s. per foot.

Large oak, aſh, and elm ſell for 1s. 6d. per ſquare foot, beech and ſycamore at 1s. Oak bark from L. 6. to L. 10 per ton.

With reſpect to larch, there is not yet a ſufficiency of it in the market, to aſcertain its price; but it is admitted to be

worth 3d .or 4d. per foot more than Scotch fir, grows faſter, and is far more beautiful.

The grey willow, although it has the advantage of growing faſt and affording early ſhelter, is ſo inferior to the Huntington as to render the latter very generally preferred. Several improvers in this county have found great benefit from plantations of hoop and baſket willows. The cuttings are planted in the month of March, in rows 3 feet aſunder, and the plants 18 inches diſtant in the rows, on rich meadow land, previouſly trenched, and ridged up with drains, to carry off ſuperfluous water. In three years the ſhoots are ready for the market; and frequently ſell for L. 24 per acre, yielding a rent of L. 8 annually; from whence is to be deducted the expence of trenching, planting, and attendance, probably not exceeding L. 3 per acre.

An excellent kind of reed grows around the lakes and bogs in ſome parts of this county; and it is to be regretted that the cultivation of this uſeful plant has not been more encouraged. It affords the beſt of all thatch, capable of laſting without repair for twenty or thirty years; thereby preventing the conſumption of ſtraw, which requires to be almoſt annually replaced; and, inſtead of augmenting fodder for the ſtraw-yard, is thus waſted in thatching cottages, and purpoſes not ſo neceſſary, or for which other materials are to be preferred.

We come now to the moſt important point connected with the management of land; the conſideration of thoſe qualities which occaſion ſterility or vegetation, and the applying of ſuch manures as tend to diminiſh the one, and to promote the other. Without entering into a long technical analyſis of the component particles which conſtitute ſoil, or the chemical proceſſes through which nature calls forth the principles of vegetation, by the mingling and fermenting of various ſalts, acids, alkalies, and other ſubſtances; we may, in general, ſtate the baſis of workable ſoils to conſiſt, either of argillaceous matter, or clay properly ſo called; or elſe of flinty earths

earths, quartz, and ſilicious particles, which form the component parts of gravel and ſand *.

The various kinds of loams, moulds, moſſes, and virgin earths, are formed by the addition of animal or vegetable bodies; ſuch as dung, carrion, decayed wood, leaves, plants, peat, fixed and common air, ſediment of water, and other ſubſtances conducive to the purpoſes of vegetation †. Alkaline earths, or calcareous matter, acting on the mineral or vegetable acids, produce a great increaſe of fertility. On the other hand, the intermixtures of ores, ochres, copper, iron, and other metallic particles, or the waters impregnated with them, tend extremely to diminiſh the fertility of any ſoil; and in many inſtances prove completely fatal to the growth of plants.

* Dr Black ranges earthy ſubſtances under 5 claſſes.—
1ſt, Abſorbent, or alkaline earths.
2d, Clays.
3d, Flinty ſubſtances.
4th, Fuſible earths.
5th, Talcs, or flexible earth.

† The antient writers on huſbandry mention many noſtrums for determining the quality of ſoil.

A fat black earth is recommended by Virgil as the beſt for corn;—
" Nigra fere, et preſſo, pinguis ſub vomere terra,
" Et cui putre ſolum, (namque hoc imitamur arando)
" Optima frumentis." VIR. Geo. II.

In another place, the ſame author recommends a glutinous ſoil.

A ſalt or bitter taſte was admitted as a teſtimony of barrenneſs;—
" Salſa autem tellus, et quæ perhibetur amara,
" Frugibus infelix." VIR. Geo. II.

Columella ſays; " Pingue ſit; per ſe tamen id parum eſt, ſi dulcedine ca-
" ret." COL. lib. II. cap. II.

Pliny ſtates that the beſt ſoil is known by its ſmell;—" Illa erit optima
" quæ unguenta ſapiat." PLIN. Nat. Hiſt. lib. 17. cap. 5.

Although the antients were ignorant of chemical analyſis, yet their opinions on theſe points deſerve the attention of every farmer, and are accurately diſcuſſed by the Rev. Mr Dickſon, in his work on the Huſbandry of the Antients.

plants. The famous copper mine of Angleſea, the waters of which deſtroy all vegetation, may be cited as an example.

It is well known to chymical obſervers, that not only the muriatic, nitrous, and vitriolic acids, are contained in many ſoils and ſtrata *; but likewiſe the ſorelline, and other vegetable acids. Theſe acids, and many other ſalts, remain either neutralized or combined in ſuch forms as are ready to be called forth, by the application of heat and mixture producing combinations which refer to, and are explained by the table of elective attractions †. Not only the ſingle, but alſo the double elective attractions operate with great force in the proceſſes of nature, in regard to ſoil, manures, and vegetation.

In many parts of America, where the ſoil is compoſed, not of ſand ſimply, nor argilla ſimply, but of theſe, mingled with rich animal and vegetable ſubſtances, full of animal ſalts and vegetable acids, forming deep moulds and loams; the application of gypſum, or Paris plaiſter, in the ſmall proportion of a few buſhels to an acre, ſeldom fails to call forth the productive powers of the land, and to enſure abundant crops ‡. But if the ſame quantity of gypſum be ſpread on mere ſand, quartz,

* Clay and vitriolic acid form alum. Calcareous earth and vitriolic acid form ſelenite. The pureſt clay or argillaceous earth is obtained by adding to a ſolution of alum, a proportion of magneſia. This decompoſes the earth of alum, which is precipitated in the pureſt form.

† Single elective attraction means, the diſuniting of one body from another by the adjunction of a third. Double elective attraction implies, that when two ſubſtances, which have an affinity together, are mixed with two others, theſe two ſhall be decompoſed, and each ſhall form a combination with one of the two ſubſtances added.

‡ The baſis of gypſum, is calcareous earth. It is a ſtoney concretion extremely ſoft, and does not effervеſce with acids. But when reduced into powder, and boiled for ſome time in a ſolution of common fixed alkali, it changes into a vitriolated tartar.

quartz, till, or clay, unmingled with any animal or vegetable ſubſtance, its operation will be of no avail.

In like manner, when ſal-glauber, which is a neutral ſalt, produced by the mixture of the vitriolic acid with the foſſil alkali, is ſpread on ſoil, whoſe component parts contain particles, brought into action with that preparation, on the principle of chymical attraction; great fertility is the never failing conſequence.

Unfortunately, this analyzing mode of operation is repugnant to the habits of practical farmers; and it is only by the application of ſcientific men, and the attention of ſuch a board, as that which I have the honour of addreſſing, that the neceſſary inveſtigations can be ſpecified or promulgated. In default of ſuch aſſiſtance; under the apprehenſion, too, of being charged with theoretical deviations from the plain matter in diſcuſſion; and in expectation that ere long, by the exertions of ſo reſpectable an inſtitution, the public mind will be more fully matured for the reception of chymical deductions applied to agricultural purpoſes; I ſhall, in the mean while, confine myſelf to thoſe ordinary modes of fertilizing admitted into common practice. The ſpreading of ſand on clay, clay on ſand; earth on peat, or peat on earth, every farmer underſtands to be an improvement of the ſoil. But, in this county, with every variety of ſoil and opportunity for theſe proceſſes, there are few inſtances of ſuch ameliorations, to any extent.

The paring and burning of moors and moſſes, formerly took place to a conſiderable degree. It tended to produce two good crops, or three; but was extremely pernicious, unleſs where the ſoil was very deep, or where the object was to conſume the ſoil, until you reached a better under-ſtratum.

Another cuſtom, very prevalent in this county, was, by means of ſluices, dams, or other contrivances, to throw bogs and lower grounds under water during the winter months. By theſe means, the land was greatly enriched with the productive

ductive vegetable earth from the ſurface of the higher parts. The waters were let off in Spring, and the ground was then ploughed and ſown. But in conſequence of the great humidity and uſual deepneſs of the ſoil, the crops were very late; the produce was precarious, depending on the dryneſs of the ſeaſon; as a wet ſummer commonly lodged and ſpoiled the corn on ſuch lands. Whenever theſe grounds have been perfectly freed from wetneſs, ſprings, and ſurface-water, they have proved themſelves the beſt of all ſoils. But the leaſt inattention to theſe particulars, to the proper ridging of the land, opening of drains, and water furrows, expoſes them to numerous diſadvantages.

The plan of watering fields by little drains, and dams of a few inches wide, in this mode uſing ſtagnate water as a manure, ſo ſucceſsfully practiſed in other countries, and in England by Mr Bakewell at Diſhley, &c. has never, as far as I know of, been attempted in Ayrſhire. Indeed, at firſt, ſome portion of the ludicrous would probably attach to an improver who, in a county ſuch as ours, ſhould in this manner attempt to water fields, before he had thought of draining them. Far be it from me, however, to doubt, but this is one of the moſt efficacious manures, which, under proper modes and circumſtances, can poſſibly be applied to land. In order to give it full effect, nothing more is requiſite than to ſecure a ſmall ſtreamlet, and to conduct it along the higheſt part of a field, from that feeder forming furrows with the plough, at moderate diſtances, then throwing in, ſmall dams of turf at proper intervals, ſo as to flood every part of the field, for the period neceſſary to enrich it *.

In Carrick or the ſouthern diſtrict of the county, ſhell, clay, and ſtone marle are found in many places, and applied with advantage. One eſtate in Carrick of 900 or 1000 acres, which about

* In India, and other tropical climates, machines are conſtructed for conveying water to every well cultivated field.

about 40 years ago was ſold for little more than L. 2000, and let for about L. 100 a year, has been ſo much improved by marle, as now to let for L. 600 or L. 700 a year.

Shell marle, containing a larger proportion of calcareous earth, is the ſtrongeſt and moſt ſpeedy in its operation. About 100 cart loads of it, on an acre of earthy or clay land, yields large crops, and continues its operation on the ſoil for many years. The clay marle containing a ſmaller quantity of calcareous matter, mixed with a larger portion of argillaceous ſubſtance, is more applicable to light ſoils, and requires to be ſpread, to the amount of 200 or 300 cart loads per acre.—The ſame obſervations nearly apply to ſtone marle. The expence in common caſes may amount to L. 2 or L. 3 per acre; and the uſual mode is to ſpread the marle on the ſward, and plough it in, with the lay crop.

Marle and lime are underſtood to operate as manures, exactly in proportion to the calcareous matter they reſpectively contain. Many kinds of marle do not contain more than one-twentieth, or even one-thirtieth part of their weight of calcareous earth. Half the quantity of lime would be infinitely preferable to ſuch marles *.

Lime, however, is the ſtaple manure of this county. It has been already ſtated that 100 bolls, or 400 Wincheſter buſhels, of ſlacked lime, are commonly ſpread upon the ſod: And if the ground remains for ſeveral years in graſs, on land of a good ſtrong ſtaple, whether loam or clay, it will make the difference of 4s or 5s. per acre on the paſture; raiſe an abundance of white clover even in the wildeſt moor, where no ſuch plant had been ſeen before.

* In order to aſcertain the quantity of calcareous matter in marle, Dr Black recommends to diſſolve it in acid, and then precipitate by an alkali. Or as a more ſimple proceſs, to put 200 grains of the marle in a florence flaſk, adding a little water; and after ſaturating with an acid, obſerving the loſs of weight. If it loſe 40 grains, there are one hundred grains of calcareous matter in the marle. The loſs of weight which it ſuffers being always about 40 per cent. of the whole, and whatever be the loſs of weight, we can by this mode judge of the quantity of calcareous matter contained.

If the ground is ploughed, for 3 years, it will yield ſeveral quarters of grain per acre more than would have been produced without the lime.—On ſandy ground it is not the practice to uſe lime, although it evidently improves the paſture even on that ſoil; and on ſuch parts of the moors as are previouſly drained it produces the very beſt effects. But when thrown upon land in a deluged condition, little benefit can be derived from the application.

On the coaſt, the limeſtone is brought as ballaſt from Lerne, and other places in Ireland *. It coſts 3s. 6d. per ton of ſtones delivered at the harbour. It is ſold from the draw-kilns at 6d. per boll of ſlacked lime, equal to half a boll of ſhells. A ton of limeſtone will produce 8 or 9 bolls of ſlacked lime; and, in addition to the price of 6d. per boll, it frequently coſts as much to lead it, and lay it on the ground: So that farmers expend L. 5 per hundred bolls of lime, which is the uſual quantity ſpread upon an acre.

Many farmers maintain, that inſtead of adhering to this expenſive practice, of ſpreading ſo large a quantity of lime per acre on the ſward, it is better to ſpread the half upon a fallow. This is daily coming into uſe, when land is preparing for wheat or barley, to which 40 or 50 cart-loads of dung per acre are added when they can be ſpared. Failing dung, a compoſt made of lime and ſweepings of drains and ditches, is found to produce the moſt luxuriant crops of grain; and acts as an admirable top-dreſſing for hay and paſture lands.

It is aſſerted by ſome improvers, that the burning of the lime, and the cauſtic quality it thereby acquires, are not requiſite to call forth its ameliorating powers; being, as they ſay, equally efficient when merely pulverized, without burning and ſpread in powder. Dr Black, indeed, poſitively maintains, that lime is equally applicable in its mild, as in its cauſtic

* In ſome parts of Ireland, there is an ingenious contrivance for erecting ſalt pans over a draw-kiln, ſo as to perform the operations of each, with the ſame fire.

caultic ſtate *; that it ſhould remain 12 months on the ſward before the ground be p'oughed, by which it ſinks into the earth, is incorporated with the ſoil, and corrupts the vegetable matter, ſo forming a manure.

It is an opinion very prevalent in Ayrſhire, that although lime improves the land, and enables it to produce ſuperior crops of graſs and corn; yet that, if repeated, it exhauſts the ſoil, and would at laſt reduce it to a caput mortuum. It is obvious, that if a farmer, whether by lime or any other means, can bring his fields into high condition; either he or his landlord muſt be culpable indeed, if they be afterwards reduced to barrenneſs. But, perhaps, the operation of lime being to attract and bring into action the different acids contained in the ground, may leave the ſoil diminiſhed in its means of reproducing theſe ingredients; without which, when the operation of liming is repeated, the calcareous matter may remain inactive and without effect.

It is to be regretted, that ſo few endeavours have been made in this county, to render peat or moſs, productive as a manure. Every chemical perſon knows that peat or moſs contains a large proportion of vegetable matter; that the vegetable alkaline ſalts are obtained from it by burning; and that the application of alkaline matter may be uſed to call forth the ſorelline and other acids which abound in it. The few attempts which have been made in this reſpect, encourage us to perſiſt in more vigorous endeavours, and the extreme plenty and cheapneſs of the material, render the application of it as a manure one of the greateſt deſiderata in Scottiſh huſbandry.

The learned and ingenious Biſhop of Landaff ſtates, that common ſea ſalt, as a manure, in ſmall quantities, tends to fertilize, whereas, in large proportions it effectually deſtroys vegetation. Perhaps in this latter mode of application, it

* See Dr Black's Lectures.

might be uſeful to deſtroy the roots of quick-ns, ruſhes, and other pernicious weeds, which infeſt this county.

Soapers waſte, which is the earthy part of kelp and barilla, mixed with the lime which manufacturers uſe to bring it to the cauſtic ſtate, and from which the alkaline and other ſalts have been ſeparated by ſolution, proves a valuable manure, and is in great requeſt among many Ayrſhire farmers, as well as horn ſhavings, for the purpoſe of ſpreading upon graſs.

Sea-weed is much uſed upon the coaſt. It is ſometimes carried immediately from the water, and ploughed in, for barley or other crops. But is more frequently allowed to rot; and in that ſtate is ſpread at the rate of 70 or 80 ſingle-horſe carts per acre. It does not however ſeem to continue its effects above two ſucceeding crops, eſpecially in ſandy ſoils; although in clay lands it is more durable. When uſed for turnip, it is apt to burn and deſtroy the ſeed; inſomuch, that unleſs carefully managed, it will often occaſion a failure of the crop, on the ſame field where the part manured with dung, proves luxuriant. It is likewiſe obſerved to give an unpleaſant taſte to potatoes, and ſome other vegetables.

With reſpect to dung, any obſervations on its value or mode of action would be ſuperfluous. It only remains to expreſs regret, that ſo little pains are taken in this county to increaſe its quantity, and preſerve it in a proper ſtate. Inſtead of forming layers of alternate mould and dung, and turning it at proper intervals, the lower and more ignorant claſs of farmers, ſtill continue the barbarous practice of throwing it out from the ſtable or cow-houſe on a declivity, where its juices are exhauſted, or run off with the rain which drenches it. The benefits ariſing from feeding all the live ſtock in ſtables, ſheds or ſtraw-yards, as practiſed in the Netherlands, are however ſo well underſtood, at leaſt in theory, throughout this county, that they cannot fail ere long to be very generally eſtabliſhed.

The ploughing in, of vetches, tares, lupines, or other pulſe, when green, is alſo recommended as an excellent manure by the

the beſt ruſtic writers; but if allowed to form the ſeed, they have at all times been held pernicious.

So much reſpecting the nature and management of land in Ayrſhire. The next object is to conſider the kinds and properties of thoſe animals which are maintained on its productions.

The prejudices long entertained in this country againſt the uſe of pork or bacon, prevented the inhabitants from paying due attention, to the breed of ſwine. But the merits of this uſeful animal are now recogniſed, and its fleſh riſes in eſtimation among all claſſes of the people. Although many farmers keep a few for their own uſe, yet they are ſeldom raiſed or fed in any conſiderable numbers, unleſs at gentlemens houſes, (where the ſmall, round, black, Chineſe kind, are generally preferred), or at diſtilleries, where the ſuperior ſize and weight of the large, white, Shropſhire hogs, render them more eligible for the market.

The aſs has alſo fallen under the diſpleaſure of the Ayrſhire people, ſo that there is hardly a quadruped of this deſcription to be ſeen.

An attempt was made ſome years ago, by the late Mr Oſwald, to introduce mules. With this view, he procured, at great expence, remarkable fine jack-aſſes from Spain, and bred a number of excellent, well-ſized mules, at his ſeat of Auchincruive.

Some of theſe were ſold in the county, but notwithſtanding their durability and hardineſs, there is ſcarcely one of them now. And the farmers all prefer horſes, which for draught and farming work, are perhaps, ſuperior in this county to any in the kingdom.

The Ayrſhire horſes are neither flat footed, gummy legged, clumſy animals, like the unwieldy breed, which ſupplies the drays of London; nor are they by any means, ſo ſlight and flimſy, as the working ſtock of Yorkſhire. On the contrary, they are ſhort and active on their legs, hard in the hoofs, large in the arms, very deep and powerful in the counter, ſtreight in the back, ſquare in the body, and broad acroſs the

fillets.

fillets. Their predominant defects are, a ſhortneſs and coarſeneſs of the forehand, and a deficiency of that elegance of form and action, which only belong to particular deſcriptions of high-bred, or foreign horſes. Formerly, the black and grey colours uſed to prevail; but of late years, a decided preference has been given to the bays and browns, with black tails, legs, and manes. Theſe have been improved by ſtrong chapman ſtallions *, covering from different parts of England.

It is generally believed, that the valuable, hardy breed of ſtrong work horſes, ſo remarkable in this, and the adjoining county of Lanark, had been chiefly owing to ſome Flanders or Holſtein ſtallions, brought over laſt century by one of the Dukes Hamilton's. But it appears from the works of Fordun, Pitſcottie, Æneas Sylvius, Froiſſard, the Epiſtolæ Regum Scotorum, and other compoſitions on Scotch affairs, that great pains had been taken, at early periods, under ſeveral of the Scottiſh Kings, particularly during the reigns of King David Bruce, and all the James's, to bring, not only active breeds for the ſaddle from Hungary, Spain, and Barbary, but alſo to import ſtrong and uſeful kinds, from Flanders, Germany, and Denmark †.

Few

* Chapman ſtallions, are thoſe which cover at the different fairs and markets, for coach and ſaddle ſtock; being neither thorough bred, like racers, nor ſo coarſe as the dray, and waggon breed.

† Any one deſirous of knowing the ſtate of ſtock and agriculture in ancient times, may conſult the ſtatute of Alexander II. anno 1214, containing inſtructions regulating the ſtocking of farms and huſbandry. At that period, all the ploughing was performed by oxen.

‡ This may help to account for the value of the prevailing race in queſtion; as the ſtrong black breed of Leiceſterſhire, is underſtood to have originated from an introduction of Flanders horſes into that county, by a Lord Haſtings, ſeveral centuries ago. Every one acquainted with the hiſtory of animals, knows, that in five generations, any croſs breed, may be brought, to the properties of the original dam or ſire: In the ſame manner as the deſcendants

of

Few ſtallions in Ayrſhire cover for more than 10s. or 15s. but great attention is paid to movements, colour, ſtrength, and form. The graſs is ſo late in this county, that many farmers do not wiſh their mares to foal till near the end of May; eſpecially as their producing ſooner, interferes with the barley ſeed time, and prevents their being uſed at that buſy period. The foal is allowed to ſuck 5 or 6 months, during which time, the mare is only uſed at gentle work. Suckers at weaning time, ſell from L. 7 to L. 12; yearlings and two-year-olds from L. 12 to L. 20. And it is by no means uncommon to pay L. 30 and L. 40 for a work-horſe or ſtrong breeding mare. Ordinary farming work, however, is performed by horſes worth about L. 20; and multitudes of low priced, light carcaſſed horſes, are annually brought from Ireland, to the fairs at Ayr, Irvine, and Kilmarnock.

A few racing ſtallions of high pedigrees have covered in the county, and produced a breed extremely different from the farming ſtock I have endeavoured to deſcribe *.

It is to be obſerved, that all thorough bred horſes are derived from Barbs or Arabs, without any other mixture †. Theſe

of a mulatto, are brought to be perfectly white or completely black in the courſe of the ſame number of gradations. This fact explains the rapidity, with which any favourite breed of animals may be introduced into a country.

* In order as much as poſſible to improve the breed of horſes, already ſo excellent in the county, it has been my object, to procure the ſtrongeſt Flanders ſtallion, of a bay colour, and of that ſort which bring their legs well under them, and are ſpeedy in their movements. He weighs above 1200 weight, walks faſt, and trots at the rate of 13 miles in the hour, being able to draw 2 tons. A proper ſelection of the beſt breed of bay Flanders mares, would be a valuable acquiſition; but they are difficult to be procured. It has alſo appeared to me no leſs neceſſary, to introduce the ſtrongeſt thorough bred ſtallion that can be found, for the purpoſe of producing, with proper croſſes, horſes poſſeſſing vigour, power, and action, fit for cavalry, or carriages, or for the field.

† Even thoſe who cover under the denomination of chapman ſtallions, are commonly half or three quarters bred.

Theſe, have been introduced and propagated with great expence and care, ſince the days of Charles the II. And as moſt of the fine ſtallions in the kingdom, are either entirely, or in part, of this Arab breed, it unavoidably tends to diffuſe throughout the general race of horſes, the properties and defects attached to this deſcription of animals. Now, although the Barbs and Arabs are ſuperior to others for ſpeed and endurance of exertion, yet they have many imperfections, which, unleſs corrected by croſſing them with other breeds, render them inapplicable to various important purpoſes.

They are in general unfit for draught, owing to the delicacy of their frame, and their phyſical deficiency of weight. Few thorough bred horſes weighing more than 800 lb. They are generally thin in the quarters, ſmall in the limbs, tender in the hoofs, and are apt to go near the ground, which, with their ſlender forehands, and incapacity of moving with the quick turns, evolutions, and converſions of the Turkiſh or Hungarian horſes, render them neither uſeful as cavalry, ſafe for the road, nor elegant in harneſs.

You will forgive me, Sir, for this digreſſion ſuggeſted by the prevailing tendency of reducing all kinds of horſes, too near the ſtandard of the racer. While, in my apprehenſion, the public utility would be more ſucceſsfully promoted, by propagating only the moſt powerful of the Arab race, ſo as to intermix the valuable qualities of that breed, with the weight, hardineſs and modes of action belonging to other kinds, and neceſſary for the different purpoſes in which horſes are employed *.

With

* The moſt active and beautiful parade horſes in Europe are the Neapolitan. And the horſes of Curdiſtan, are, in many reſpects, ſuperior to the Arab, being hardier, and of a firmer texture in the hoof, lifting their feet higher, leſs apt to ſtumble; of great ſpeed, and accuſtomed to a rocky country.

It may, perhaps, be thought fanciful to hint, that in the opinion of many nations, the fleſh of horſes is not leſs ſalutary and wholeſome, and equally well taſted as that of oxen. It is eaten by all the race of Tartars, and ſeveral other tribes of people, and if their example were to be adopted in other countries, the horſe would become, in every reſpect, an animal more uſeful, and as economical as the ox.

With reſpect to neat cattle, the neceſſity of doing much in little time, in order to take advantage of a favourable interval, to make up for the interruption of labour, occaſioned by bad ſeaſons, has led to the total diſuſe of oxen for the purpoſes of farming in this county; eſpecially, as their feet are ſeldom found to ſtand work on hard roads. It is, however, an admitted fact, that the cattle of India, Italy, Portugal, and many other parts of the world, perform all kinds of labour, and are conſtantly uſed both in farming and on the road, without ſuffering any inconvenience *.

So far are the oxen, even of this country, from being ſlow or aukward in their movements, when properly attended to, that the writer of theſe ſheets trained a pair of them which ploughed without a driver, and tilled about an Engliſh acre daily.

In treating of Ayrſhire cattle, however, we are only to conſider them as uſed for fattening or for dairies. Throughout the greateſt part of Carrick, or the ſouthern diſtrict of the county, the Galloway breed prevails. Theſe, by great pains and long attention, have been brought to high perfection, and, in many particulars, are preferable for fattening, to any breed in either kingdom. They are generally black or brindled, though ſome of them are white or dun, and the beſt breed of them are polled †. They are ſhort legged, rough haired, long bodied, deep in the cheſt, full in the carcaſe, and round acroſs the hips and ſirloin. They commonly weigh

* All the artillery in India is drawn by oxen. But they are finer in the limbs, harder in the hoofs, and leſs heavy in the carcaſe, than the breed of this kingdom, partaking, in a great meaſure, of the Beſon race deſcribed by Buffon and other naturaliſts.

† Several gentlemen have now raiſed the Galloway breed to a much larger ſize.

Beef commonly ſells from 3d. to 4d. per Engliſh pound, and tallow one third dearer.

from 20 to 40 ſtone Engliſh *, are very hardy, eaſily fed, often produce one fourth of their weight in tallow, and grow fat where the large heavy breed of other counties would be ſtarved.

Great droves of them are annually ſent to England at three and four years old, and yield from 5l. to 10l. a-head; and their beef is univerſally admitted to be excellent.

They are ſuppoſed to be as ill adapted as the Lancaſhire and Leiceſterſhire breed, for the purpoſes of milk; inſomuch, that there is hardly a dairy in the parts of the country where they predominate. But many circumſtances lead me to conclude, that this deficiency ariſes from inattention to milk as an object, any farther than what is neceſſary to maintain the calf. For, among this breed, many cows are found which yield great quantities of milk, and from which, in dairy countries, would be propagated, kinds, poſſeſſing that quality. Whereas, in breeding countries, a cow is only valued in proportion, as ſhe appears adapted, to the purpoſes of fattening †.

In Cunningham, or the northern diviſion of the county, a breed of cattle has for more than a century been eſtabliſhed, remarkable for the quantity and quality of their milk in proportion to their ſize. They have long been denominated the Dunlop breed, from the ancient family of that name, or the pariſh where the breed was firſt brought to perfection, and where there ſtill continues a greater attention to milk cows and dairies than in any other part of Scotland.

The

* In order to prevent the danger ariſing from horned cattle in ſtuds and ſtraw yards, the beſt mode is to cut out the budding knob, or root of the horn, while the calf is very young.—This was ſuggeſted to me by Mr Robert Burns, whoſe general talents are no leſs conſpicuous, than the poetic powers, which have done ſo much honour to the county where he was born.

† The ſale of theſe cattle has, for many years, been of great extent; and a gentleman of this county, by continuing long to purchaſe large numbers for the Engliſh market, acquired a landed property worth from 5000l. to 6000l. a year.

The cattle in this diſtrict appear originally to have been of the old Scotch low country kind. Formerly black or brown, with white or flecked faces, and white ſtreaks along their backs, were prevailing colours. But within theſe twenty years, brown and white mottled cattle are ſo generally preferred, as to bring a larger price than others of equal ſize and ſhape, if differently marked. It appears, however, that this mottled breed is of different origin from the former ſtock, and the rapidity with which they have been diffuſed over a great extent of country, to the almoſt entire excluſion of the preceding race, is a ſingular circumſtance in the hiſtory of breeding. Indeed, it is aſſerted by a gentleman of great ſkill and long experience *, that this breed was introduced into Ayrſhire by the preſent Earl of Marchmont, and afterwards reared at the ſeat of the Earl of Glaſgow, from whence they are ſaid to have ſpread over all the county.

This breed is ſhort in the leg, finely ſhaped in the head and neck, with ſmall horns, not wide, but tapering to the point. They are neither ſo thin coated as the Dutch, nor ſo thick and rough hided as the Lancaſhire cattle. They are deep in the body, but not ſo long, nor ſo full and ample, in the carcaſe and hind quarters as ſome other kinds. They uſually weigh from 20 to 40 Engliſh ſtone, and ſell from 7l. to 12l. according to their ſize, ſhape, and qualities. It is not uncommon for theſe ſmall cows to give from 24 to 34 Engliſh quarts of milk daily, during the ſummer months, while ſome of them will give as far as 40 quarts, and yield 8 or 9 Engliſh pounds of butter weekly. The breed is now ſo generally diffuſed, over Cunningham and Coil, that very few of other ſorts, are reared on any well regulated farm. The farmers reckon that a cow yielding 20 quarts of milk per day during the ſummer ſeaſon, will produce cheeſe and butter worth about 6l. per annum.

* Mr Bruce Campbell.

The ſweetmilk cheeſe, as it is called, which is the kind generally manufactured in theſe parts of Ayrſhire, is made by curdling each days milk of the dairy ſeparately. After the curd is mixed with ſalt, and broken with the hand, or cut in ſhreds, it is preſſed extremely hard in a frame, under a ſtone, moving with a double ſcrew, and often weighing half a ton. The cloth is frequently changed, and in a few days the cheeſe is taken out of the frame and laid up to dry. It is of a mild and pleaſant taſte, and ſells at an average from 2 ½d. to 4d. per Engliſh pound, while butter ſells from 6d. to 7d. for the ſame weight.

It is remarked that the beſt of theſe milch cows are good feeders, and eaſily fattened, although their ſhapes in ſeveral points are different from thoſe approved by Connoiſſeurs. It appears, indeed, that the qualities of yielding large quantities of rich milk, and of fattening with facility, on a moderate portion of food, are by no means incompatible. And that the reaſon of thoſe deſiderata being ſeldom united in the ſame animal, ariſes rather from the different views with which ſtock is bred, and the inattention of farmers to the double objects in queſtion, than to any great difficulty, in correcting the ſhape of the beſt milch cattle, and rendering them equal in form and aptitude of fattening, to the moſt approved breeding ſtock *.

It is to be obſerved, that ſeveral gentlemen in the county, as well as myſelf, endeavoured, ſome years ago, to introduce the beſt breed of the wide horned Craven, Lancaſhire and Leiceſterſhire cattle. Many of the calves were diſperſed among the farmers both in Coil and Cunninghame. But ſo great is the prejudice againſt them, that though they were admitted to be very handſome, not one is now remaining in the county.

In

* Under this impreſſion I have collected ſome of the favourite kinds of Darlington or Teeſwater, and Yorkſhire, meaning to croſs them with the Ayrſhire ſtock, in order to unite the properties already mentioned.

In former times a proportion of Dutch or Holderneſs cattle had been propagated, and when well fed, yielded large quantities of milk. But they were thin haired, lank in the quarters, and delicate in the conſtitution, which rendered them unfit for a ſoil and climate ſuch as Ayrſhire. They were, beſides, extremely difficult to fatten, yielded little tallow; and from the ſpareneſs of their ſhapes, incapable of carrying much fleſh upon the proper places.

Alderneys and Guernſeys have alſo been occaſionally introduced, in order to give a richneſs and colour to the milk and butter; which they do in a degree ſuperior to any other animal of the cow ſpecies.

Graziers are ſometimes tempted by the comparative lowneſs of price, to purchaſe Iriſh cattle, which are large, wide horned, and raw boned. But they are ſo difficult to fatten, that they commonly ſell L. 2 or L. 3 a-head, cheaper than Ayrſhire cattle, of the ſame ſize and weight.

Other farmers ſtock their paſture lands with a ſmall breed of Highland cattle, which, at 2 or 3 years old, may be bought from 20s. to L. 3 a-head. Theſe having been bred on hills, and barren heaths, improve moſt rapidly in the low country. And when fed a year or two on rich paſture, are eſteemed ſuperior for taſte and flavour to any meat that comes to market.

On the ſubject of animals, it only remains to offer ſome obſervations, reſpecting the kinds of ſheep in this county. On the dry lands along the coaſt, a ſmall white faced race has long exiſted. The little wool they have, is not altogether coarſe; but they are looſe made, ill ſhaped, and have no good quality to recommend them. There is, however, a ſort on the eſtate of Mr Kennedy of Denure, on the coaſt of Carrick, whoſe wool is very fine, and who partake of the properties of the Mochrum or coaſt-breed of Galloway.

The eſtabliſhed Aborigines are bred in great numbers on the moors. They are reckoned by ſome the moſt hardy, active,

and

and reſtleſs animals of the ſheep tribe *. They are round, firm, and well-ſhaped; black-faced and black-legged, with large horns. Their wool is open, ſharp-pointed, and of the coarſeſt quality; ſeldom weighs more than 2 or 3 lb. per fleece; and not worth 6d. for an Engliſh pound. The weathers of this ſort, are uſually bought, at 3 years old, for L. 10 or L. 12 per ſcore, and will feed to double that value; weighing about 12 or 15 Engliſh pound per quarter; yielding tallow, equal to one fourth of their weight; and, when fed till 5 years old, afford the fineſt mutton in the kingdom †.

If it were poſſible, by any intermixture, to give theſe animals a leſs reſtleſs nature, and an ample fleece of finer wool, without impairing the hardineſs and other qualities which fit them ſo peculiarly for their bleak and barren ſituations, it would prove the greateſt benefit that could be conferred on moorland property. The heavy, coarſe, and long-wooled lazy breeds of Lincoln, Leiceſter, and Teeſwater, could hardly find ſubſiſtence under ſuch expoſure; and the fine-woolled race of Hereford would probably ceaſe to be diſtinguiſhed for their carding ſtaple, if drenched in thoſe cold moorland bogs and marſhes ‡.

To

* Others aſſert, that what is called the long or Cheviot breed, from the cloſeneſs of their fleeces, can as well, and, ſome ſay, can better, reſiſt the inclemency of the ſeaſons.

† Mutton ſells from 3d. to 4d. per Engliſh pound, and tallow one third dearer.

The moorland ſhepherds are extremely diligent and ſkillful, taking conſtant notice of their flocks, and attending to the diſorders which frequently affliſt them. But, in the low parts of the county, great ignorance and inattention on this ſubject are united. Numbers of ſheep periſh under the rot and ſcab.

Farmers often loſe their cattle by the moor-ill, and murrain; and hundreds of horſes die every year by botts, greaſe, ſtrangles, and inflammations of the inteſtines.——It is ſtrange indeed, that ſo little attention ſhould be paid to the diſeaſes of animals in this county; that there ſhould neither be perſons ſkillful in the cure of them, nor books and publications circulated to direct the farmer how to act when ſuch diſaſters happen to his ſtock.

‡ The Hereford ſeem, in many of their features, to mark a deſcent from the

To croſs them with the finer and more delicate race of Spain would ſeem too violent a tranſition; and the mountain-breeds, in other parts of this kingdom, are in few reſpects ſuperior to themſelves. The Cheviot ſheep, indeed, are finer woolled, but their fleeces are by no means equal in value to the Hereford or the Spaniſh; and they are, in general, of a long-ſhape, rather looſe texture, inferior in theſe important particulars to the breed we are deſcribing *.

The kind of ſheep which I brought from Colchis or Trebiſonde, ſome years ago, being from a cold bleak climate, hardy in their nature, and covered with the fineſt wool of the long combing kind, afforded great expectations of an admirable intermixture: But in this belief I found myſelf miſtaken.

It is extremely probable, that animals, like plants, may by degrees, be reconciled to climates, the moſt diſtant from their natural poſitions. And, as cherries were brought from Pontus, and peaches from Perſia, firſt to Italy, and afterwards, by ſlow gradations, to France and England; ſo, the fineſt ſheep of Spain, and the ſilken-fleeced breed of Angora or Ancyra, may in time aſſimilate with the coldeſt moors of Ayrſhire.

But, for the preſent, confining our ſuggeſtions to ſuch experiments as are within the reach of ordinary farmers; it appears, that the hardieſt and moſt active breed of ſheep, producing a valuable coat of wool, whether of the carding or the combing ſtaple, would be the moſt eligible means of adding to the value of the preſent moorland race.

With all their diſadvantages, it is ſtill a queſtion, Whether the moſt choſen kinds of Leiceſter, Lincoln, Teeſwater, or Northumberland,

the fine-woolled Spaniſh breed, which we know was brought into England, at early periods of our hiſtory.

* In October laſt, having occaſion to attend a ſale of ſeveral hundred ſheep of various kinds and countries, belonging to the Britiſh Wool Society, it appeared to me, that the handſomeſt ſheep expoſed was a moorland ram, bought for 12s.

Northumberland, on a ſpecified-ſurface, will produce an equal profit?

It is taken for granted, that the principles eſtabliſhed on this ſubject, by the ingenious Mr Bakewell, are correct; and that a ſheep, whoſe bones are ſmall, whoſe ſtomach is leſs capacious, in proportion to his ſize, and who from habit, diſpoſition, or conſtitution, has an aptitude to fatten on a more moderate proportion of food, is more valuable than one of oppoſite tendencies.—It ſtill remains to be conſidered, whether a moorland black-faced wether, weighing 15 lb. per quarter, beſides a quantity of tallow equal to one fourth of his whole weight, and worth 10s, of whom 5 or 6 may be fattened, to double that value, on an acre of land worth 20s. is not a more profitable bargain, than the beſt Leiceſter wether, at the ordinary price of 30s. Such a ſheep, commonly weighs about 30 lb. a quarter, produces a coarſe fleece, little tallow, and bad mutton. He is accuſtomed to feed at the rate of 3 or 4 upon an acre of land, let at 50s. or L. 3. He is unable and unwilling to ſeek his food at any diſtance, and is pampered from lambing-time, with hay, oats, and pounded oil-cakes, placed in moveable racks and mangers, under ſheds and penthouſes, for his accommodation. After all, he does not yield more than 40s. or at the utmoſt, 50s. in his fatteſt ſtate. It is alſo aſſerted, that this breed is ſubject to the rot, and other diſorders, which render them unfit to be kept to a proper age, on the ſtrong, wet paſtures of Ayrſhire. The practice in England being to kill, about 2 years old, all thoſe that are not meant for breeding ſtock.

Notwithſtanding theſe remarks, it has always appeared to me an eligible object of experiment, to introduce the beſt breeds of thoſe counties. Various gentlemen in former times had procured a very large race of long-legged ſheep from Teeſwater and other parts. Theſe, though ill-ſhaped, and requiring great attention, yielded from 12 to 24 Engliſh pounds of wool per fleece; the maximum of which is probably as great a quantity, as is produced at preſent

on

on any ſheep in England. This race blending with the common claſſes of the country, ſupplied the farmers with the pets, or tame ſheep, which were regularly houſed and paſtured with the milch cows. But there was no regular ſtock, or conſiderable number of them to be found, in any part of Ayrſhire *.

In the year 1776, ſeveral gentlemen of the county, procured ſix ſcore of ewes, and the uſe of two rams, from Mr Culley in Northumberland, who charged us what ſeemed an extravagant price, and ſupplied us with an indifferent ſtock. The neighbouring gentlemen in general maintained, that the introduction of this breed would impair the quality of Ayrſhire mutton; the farmers aſſerted, they could not thrive on our wet land and rainy climate; while the manufacturers declared their wool too coarſe, to be deſerving of encouragement.

This breed, however, has increaſed in favour and in population. They yield in general two lambs from every breeding ewe; weigh about 20 Engliſh pounds per quarter, and ſell for 25s. or 30s. at two years old, when fat. Yield 8 or 9 lbs. of wool, worth 1cd. per Engliſh lb. And are not only eaſily maintained on tolerable land, but ſo quiet, as to remain within the ſlighteſt fence; and ſo much eſteemed, that farmers willingly pay 10 or 12s annually, for grazing a breeding ewe of this deſcription. In addition to this kind, I have procured the beſt breed from Teeſwater, and a valuable ſtock from Mr Bakewell, beſides a Spaniſh ram, together with ſome Spaniſh and Hereford ewes, from the Britiſh Wool Society. In doing this, it is my object to combine, by different croſſes, the beſt properties of ſhape and carcaſe, with the greateſt hardineſs, and aptitude to fatten, as well as the beſt fleeces of carding and of combing wool. For undoubtedly, it is the du-

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* The old Teeſwater breed is now ſo croſſed with the Leiceſterſhire, and other kinds, as to have loſt its diſtinctive properties. It uſed to yield a larger fleece than any ſheep in England, probably not even excepting the beſt breed of Lincolnſhire. It ſeems ſtrange, that, in eſtimating the value of this uſeful animal, ſuch excluſive attention ſhould, among the breeders, be now beſtowed on carcaſe, to the almoſt total diſregard of wool.

ty of landholders, not only to promote, and to diffuſe as much as poſſible, every ſpecies of improvement, but to counteract the diſgraceful ſpirit of illiberal monopoly, which has hitherto confined the favourite breeds of uſeful, animals, within a narrow range.

This diffuſive operation, however, can hardly be effected without the unremitting endeavours of a number of individuals, in their different diſtricts. Theſe require the aid and intervention of public, and aſſociated bodies of men, granting due encouragement and rewards to thoſe who dedicate their ſkill, and labour, to the amelioration of ſtock, although their object may have been merely perſonal emolument, undirected by any public principle.

It is obvious, that inſtead of one or two fine ſtallions, bulls, or rams, in a whole country, let out at exorbitant rates, every diſtrict, nay, every pariſh, ought to be ſupplied with theſe uſeful means of reproduction on the moſt moderate terms. With this object, numerous ſocieties of landholders and farmers, ought to be eſtabliſhed. They ſhould procure the beſt publications on ſubjects of agriculture; offering premiums for the fineſt ſtallions, bulls, and rams, produced within the pariſh; advertiſing annual ploughing matches, granting rewards to the moſt ſkilful, and purchaſing models, or at leaſt deſigns of uſeful implements of huſbandry on approved principles, for the inſtruction of all perſons connected with mechanic trades.

If theſe endeavours were encouraged, and extended by the freeholders at head-courts, and other county meetings, ſpecifying the objects to which, improvements ought in different diſtricts to be directed; they could not fail to be productive of permanent advantage, to the landed intereſt, and to the community at large.

Theſe remarks, however, have a more immediate reference to the general means that ought to be adopted, for diffuſing uſeful knowledge, and to the inſtitutions neceſſary for promoting, a regulated ſyſtem of experiment and improvement,

ment, connected with the various branches of rural economy. In China, it is eſteemed the proudeſt diſtinction of the Emperor, that he is the firſt cultivator in his own dominions; and it is fortunate for this country, that the attention of the Sovereign, and of his Majeſty's government, are graciouſly beſtowed upon an object ſo deſerving of the Royal care *.

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* Don Juan Enrique de Grieff, a Spaniſh author, in his Diſcurſos Mercuriales, improving on the ſuggeſtions of Reaumur, has urged the great national advantages, that might be derived from eſtabliſhments formed for the purpoſe of conducting, a connected ſeries of inductions on the kinds, combinations, mixtures, and hiſtory of different uſeful animals.

Although no public inſtitution, of this deſcription exiſts in Great Britain, yet an individual, (Mr John Hunter) who, unfortunately for ſcience, is now no more, guided by the impulſe of a vigorous and enlightened mind, has extended the bounds of knowledge in this reſpect, with a ſucceſsful energy, deſerving the ſanction and encouragement of a great nation. Eſpecially, when it is conſidered, that nothing but permanent eſtabliſhments, and a prolonged courſe of well directed obſervations, can give full effect to the object in view.

Theſe ideas, are, in a great meaſure confirmed by the benefits which have reſulted from ſimiliar inſtitutions, connected with the vegetable kingdom. To the Royal and botanical gardens, the public is indebted for much important information. On the Preſident of the Royal Society, Sir Joſeph Banks, the beſt tribute of applauſe and admiration has been beſtowed by all Europe, for the ſuperior exertions he has made, in this extenſive range.—From the labours of ſuch men, when directed to objects of cultivation, the moſt luminous diſcoveries, and uſeful improvements may rationally be expected.

It is well known, that the moſt beneficial introduction of plants and animals from one kingdom to another, has ariſen from inſtitutions and exertions, ſuch as thoſe to which I have alluded. It would be tedious to enumerate all the eſculent plants in Great Britain, which have been brought from other countries; mulberries, and ſilk-worms from the Eaſt, to the Morea, and afterwards to Italy and France; coffee trees, bread-fruit trees, various kinds of cotton ſhrubs, and other valuable productions, tranſplanted from one quarter of the globe to another. Neither is it neceſſary to ſpecify the collections of the Dutch Eaſt India Company, in their botanical eſtabliſhment, at the Cape of Good Hope; thoſe of Mr de Viſme, in his celebrated gardens at Liſbon; or the very intereſting experiments conducted by Dr Anderſon, under the government of Fort St. George; although they probably, are as conducive to the objects in queſtion, as any others on the globe.

One fact is certain, that through negligence and inattention, we loſe the beneſit of many productions, which might eaſily be brought to aſſimilate with our ſoil and climate *.

It is alſo proved, that a multitude of plants, which the antients cultivated, for food and other purpoſes, have totally diſappeared from the regimen of modern nations. Among many others, we may mention ervum, ocymum, and in particular, cytiſus, which was held in ſuch repute among the Romans, for feeding every kind of ſtock †.

We

* As inſtances, we may venture to ſuggeſt the luxuriant graſs, or broad-leaved gramen of Madagaſcar, called Fatak, and the hardy kind of rice, which grows on the hills of Cochin-China, without any other water than accidental ſhowers.

† It is ſurpriſing that Cytiſus ſhould have fallen into diſuſe; for, it was not only reckoned the moſt profitable, but the hardieſt of plants, enduring bad ſoil, heat, or cold, froſt, or ſnow, without detriment.

From Pliny's account, it appears to have been originally brought from the Cyclade iſlands, and not to have been very common in Italy; but ſo productive, that the value of 2000 ſeſtertiæ or L. 64 was frequently raiſed upon a jugerum, which was little more than half a Scotch acre.

It may either ſays Pliny, be caſt into the ground with barley, or be ſown in ſpring like leeks, or its ſhoots may be planted out before winter, about a cubit in length, in furrows, one foot aſunder. ("Plantæ cubitales ſeruntur "ſcrobe pedali.")

It comes to perfection in three years, and begins to be cropped at the vernal equinox, when it ceaſes to flower; affording green feeding 8 months in the year, and afterwards may be uſed dry.—It is hoary in appearance, and is a ſhrub, with a narrow treſoil leaf. Columella, after deſcribing its many valuable qualities, for producing milk, fattening cattle, healing their complaints, and affording green forage 8 months in the year, adds. "Preterea, in quolibet "agro, quamvis macerrimo, celeriter comprehendit; omnem injuriam ſine no-"xa, patitur." Col. lib. 5. cap. 12.

It ſeems, however, like the Lote tree, or Lotometra and Nymphea frutex of Egypt, as well as other valuable plants, to be entirely loſt in modern practice.

The Romans were alſo in the uſe of feeding their cattle on maſt, acorns, lupines, leaves of oak, aſh, elm, beech, and poplar.

We now proceed, to the concluding article of this diſcuſſion; to the ſtate and condition of thoſe claſſes, affected by the cultivation of the country, in the different relations, which the natural order of things eſtabliſhes, between proprietors, occupiers, and labourers, with thoſe who conſume the produce of the ſoil.

In all tranſactions, between the landholders and tenants, there is a double and counteracting influence. The relation which they have, as proprietor and occupier of the ſame ground, unites them by the ſtrongeſt ties of intereſt, againſt the conſumer, from whom it is their mutual object to extort the higheſt price, for every article of produce. They are generally not leſs accordant againſt thoſe dangerous innovators, who, in the wantonneſs of undeſerved proſperity, are apt to ſpring forth among the mercantile and manufacturing claſſes; —maintaining doctrines ſubverſive of the eſtabliſhed orders of ſociety;—menacing the country with deſperate Agrarian ſyſtems, tending to deſtroy the ſacred rights of property, and every ſpecies of ſecurity;—and under falſe pretexts of equal diſtribution, ſounding the tocſin of anarchy and confuſion.

It muſt be confeſſed, however, that this obſervation concerning the conſtitutional ſentiments, of the farming intereſt, is liable to great exceptions. In the vicinity of ſome towns, where the notions of manufacturers predominate, the farmers have been ſo far perverted, as to form aſſociations, binding themſelves under ſevere penalties, never to offer any mark of civility, to any perſon in the character of a gentleman. The conſequences are, that they become booriſh and brutal to every individual of the human ſpecies, and ſavage to the brute creation. Theſe outrageous manners are conſiderably increaſed, by the harſhneſs and auſterity, which characteriſe different ſectaries, who abound in this county.

Whenever this degrading tendency prevails, it becomes the duty of all perſons, connected with property in land, to form counter-aſſociations, binding themſelves never to grant leaſes to perſons of ſuch a deſcription; and, at all events, till this

malady ſubſides, to grant no leaſes, but from year to year, and to tenants at will.

In all engagements, between the landlord and his tenants, touching land, their intereſts, to a certain degree, are diſcordant. It is naturally the proprietor's object, to gain as much rent, and to lay out as little money on the farm as poſſible. On the other hand, the tenant has a direct intereſt, in throwing the whole burden of improvement upon the landlord; and in giving the ſmalleſt poſſible return.

It is beſides the conſtant object of the landlord, to prevent [illegible] from being over-cropped, neglected, or exhauſted; [illegible]d of every leaſe, the tenant has the ſtrongeſt [illegible]he land as much as it can bear. He does [illegible]ediate profit, but in order to render the conſequently, to obtain a renewal of [illegible]s.

[illegible]s an opinion, entertained by ſome principle laid down by Dr Smith, not to interfere, by its regulations [illegible]oncerns of individuals, applies to the [illegible]enants and proprietors. The landlord [illegible]d, and neglects to inſert judicious covenants [illegible] find his land exhauſted, and his eſtate impaired; while thoſe who fancy that the ſkill and information ariſing from the habits of ordinary farmers, render them either ſafe to be entruſted with unlimited powers of management, or likely to invent new modes of operation, are contradicted by the fact. For, in this country, improvements have in general been eſtabliſhed, not by the farmers, who can ill afford ſuch ſpeculations; but, as they ought to be, at the expence and hazard of the landholder.

On this principle, farmers ſhould not only be reſtrained from over-ploughing and miſmanagement, but the courſe and rotation ſhould be ſpecified; engaging them by covenant, to ſow graſs ſeeds, to drill beans, to fallow for turnips, vetches, kail, or colewort, rape, and cabbages; to hurdle ſheep on light land, to conſtruct ſtraw-yards, feed with oil-cakes, and erect

ſheds

ſheds or hovels for their out lying ſtock; above all, never to have more than one, or at the utmoſt two ſucceeding crops of corn on the ſame field, without an intervening green crop, or fallow; and enforcing theſe regulations, by a ſpecified increaſe of rent, in caſe of non-performance.—Adding, too, ſuch alterations and amendments, as the progreſſive improvements of the country may from time to time ſuggeſt.

In order as much as poſſible, to preſerve that cordiality, which ought ever to ſubſiſt between a landlord and his tenants, there ſhould undoubtedly be ſome admitted principle, on which their agreements are concluded. In this county, it is thought, that the whole produce of [illegible] divided into three parts. Of theſe [illegible] propriated for rent, another f[illegible] and the remainder for the pr[illegible] and his family. Great inequ[illegible] this proportion. For the te[illegible] have but the means of ba[illegible] calculation, the extenſive r[illegible] adequate ſtock and manageme[illegible]

The example of Ireland, how[illegible] or middlemen, prevail, does not e[illegible] tivation. On the contrary, if inſta[illegible]ed, where improvements have originated with great farmers, it will be ſtill more eaſy, to exhibit caſes, where whole counties have been depopulated, by ſuch a practice.

Perhaps the wiſeſt ſyſtem which human underſtanding can deviſe, after a complete diviſion and appropriation of commons, and intermingled rights, will be, to let every man rent or purchaſe, according to his means. Thus a diſtribution of property the moſt varied, from the petty tenant, and the ſmalleſt feuholder or copyholder, to the moſt extenſive renter, and the richeſt lord, will take place; as is the fact in Ayrſhire.

The farmers in this county, are a ſagacious and obſerving race of men; and though wiſely unwilling to adopt, on light ſurmiſes, every plan that projectors may ſuggeſt, yet, there

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It is beſides the conſtant object of the landlord, to prevent the land from being over-cropped, neglected, or exhauſted; while, at the end of every leaſe, the tenant has the ſtrongeſt temptation to crop the land as much as it can bear. He does this, not only for immediate profit, but in order to render the farm leſs valuable, and conſequently, to obtain a renewal of his leaſe on cheaper terms.

This ſufficiently refutes an opinion, entertained by ſome enlightened men, that a principle laid down by Dr Smith, that Government ought not to interfere, by its regulations and reſtrictions, in the concerns of individuals, applies to the tranſactions between tenants and proprietors. The landlord who acts on this idea, and neglects to inſert judicious covenants in his leaſes, will find his land exhauſted, and his eſtate impaired; while thoſe who fancy that the ſkill and information ariſing from the habits of ordinary farmers, render them either ſafe to be entruſted with unlimited powers of management, or likely to invent new modes of operation, are contradicted by the fact. For, in this country, improvements have in general been eſtabliſhed, not by the farmers, who can ill afford ſuch ſpeculations; but, as they ought to be, at the expence and hazard of the landholder.

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In order as much as poſſible, to preſerve that cordiality, which ought ever to ſubſiſt between a landlord and his tenants, there ſhould undoubtedly be ſome admitted principle, on which their agreements are concluded. In this county, it is thought, that the whole produce of the farm ſhould be divided into three parts. Of theſe that one third ſhould be appropriated for rent, another for the expence of management, and the remainder for the profit and ſubſiſtence of the tenant and his family. Great inequality muſt unavoidably ariſe, from this proportion. For the tenant, occupying only 40 acres, will have but the means of bare ſubſiſtence; while, on the ſame calculation, the extenſive renter of 500 or 1000 acres, with adequate ſtock and management, may acquire a fortune.

The example of Ireland, however, where powerful renters, or middlemen, prevail, does not encourage ſuch a mode of cultivation. On the contrary, if inſtances may be adduced, where improvements have originated with great farmers, it will be ſtill more eaſy, to exhibit caſes, where whole counties have been depopulated, by ſuch a practice.

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The farmers in this county, are a ſagacious and obſerving race of men; and though wiſely unwilling to adopt, on light ſurmiſes, every plan that projectors may ſuggeſt, yet, there

are few inſtances of their long refuſing to imitate ſuch modes and practices as experience teaches, are adapted to the country where they reſide.

The labouring claſs of men in this county, who gain their livelihood by hedging, ditching, mowing, threſhing, reaping, and other country work, are paid from 12d to 14d per day. They uſually endeavour to have a ſmall houſe and garden, which coſts them 20, 30, or 40 ſhillings, annually, beſides a cow's graſs, and ſufficient ground for their potatoes.

The habit of working by the job or piece is generally eſtabliſhed, for every kind of labour. Hedges and ditches are made from 10d or 1s per fall of ſix yards. Grain is threſhed from 10d to 1s per quarter; corn reaped and ſhocked for 5 or 6 ſhillings per acre; hay mowed for half a crown. Farm ſervants receive L. 5 wages for the half-year; and, if not fed in the family, are allowed 2 pecks of oat meal and ſixpence weekly for their maintainance. Women ſervants, for country work, L. 4 or L. 5 yearly.

Maſon's work is generally done by contract with the builder. Journeymen maſons receive 20d. or 2s. of daily wages, and carpenters are not leſs expenſive. The price of building a rood of rubble work, two feet thick, and all materials furniſhed, from 25s. to 30s. In conſequence of the numerous ſtone quarries, bricks are little uſed in the county, and houſes are ſeldom roofed with tile, which are neither ſo handſome as ſlate, nor ſo warm and comfortable as thatch *.

Great quantities of oats and oatmeal are conſtantly ſold to Paiſley, Glaſgow, and the manufacturing parts of Renfrewſhire and Lanarkſhire, and the quantities of grain and meal which

* Little attention is beſtowed on the art of making bricks. If the clay be not properly prepared, or if it be mixed with calcareous matter, they will certainly crumble and decay. The Romans made their bricks extremely thin, and burned them till they vitrified. Many aqueducts and other public buildings built of ſuch materials, remain at this day, in perfect preſervation, in different parts of Italy.

For remarks and obſervatio

hich have been imported into the county from Ireland, du- ing the laſt ten years, are expreſſed in a note at the bottom f this page*. The conſtant object of the landed intereſt has

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CCOMPTS of Grain and Oatmeal, imported into Ayr, for 10 years preceding the 10th Oct. 1793, diſtinguiſhing each year.

Periods.		Barley.	Oats.	Oat meal	Peaſe.	Wheat.
		Qrs.	Qrs.	Qrs.	Qrs.	Qrs.
rom 10th Oct. 1783 to 10th Oct.	1784	20	40		10	256½
1784	1785		628	990		
1785	1786					
1786	1787	1150	212			
1787	1788					608
1788	1789					433
1789	1790					
1790	1791	264½	81	561		842
1791	1792					20½
1792	1793					
Totals.		1434½	961	1551	10	2160

Cuſtom-houſe, Nov, 1793.

CCOMPTS of Grain and Oat-meal imported into Irvine and Saltcoaſts, for ten years preceding 10th Oct. 1793.

		Oat meal	Oats.	Barley.	Bear.	Wheat.
		Qrs.	Qrs.	Qrs.	Qrs.	Qrs.
rom 10th Oct. 1783 to 10th Oct.	1784	75	1361			
1784	1785	1112	5340½			
1785	1786		818			
1786	1787	610	10691	2335		
1787	1788	118	2222			2374½
1788	1789					239½
1789	1790		724			
1790	1791	27	3838½	637½		
1791	1792		2503½			
1792	1793					

N. B. In 1792, 48 quarters of wheat were imported; but it was afterwards exported. No other grain has been exported in the above period.

A great quantity of grain has been brought from Galloway of Britiſh growth, and ſome has been brought from Greenock, which was imported in that period.

been to raiſe and continue the price of grain above its natural level; at leaſt, to prevent the competition of foreign rivals. For this purpoſe, applications have been made ſucceſsfully to Parliament by this and other counties, to prevent the importation of grain, unleſs when the prices exceed the rates expreſſed in the laſt corn bill.

Without entering into any diſquiſition, concerning the long agitated queſtions of limited or unreſtrained circulation of grain, we may ſafely aver, that countries have uniformly proſpered, in proportion to the ſecurity and facility with which the means of ſubſiſtence have been bought and ſold. The removal of all reſtrictions of this nature, under Henry the IV. during the adminiſtration of Sully, firſt recovered France from the diſaſters of the league. On the other hand, the reſtraints impoſed on the free ſale of corn, under Colbert, tended as much to impoveriſh that kingdom, as all the extravagance of Louis the XIV.

With reſpect to Ayrſhire, the continual juggling which takes place in ſtriking the fiars, in order to determine whether the ports ſhall be open or ſhut, involves the country in a multitude of inconveniencies. Frequently, before the price of grain exceeds the rate at which the Legiſlature admits of importation, merchants foreſeeing an approaching riſe and ſcarcity of corn, would bring ſufficient quantities to ſatisfy the demand, but find themſelves reſtrained, by the apprehenſion, that when their veſſels arrive, the ports may be ſhut, and their labour loſt. Thus the prices riſe, and the poor are diſtreſſed. Again, the ports by theſe means being opened, the merchants ſeize the opportunity, and dreading the quick ſhutting of the ports, bring ſuch a ſudden influx of foreign corn, as deſtroys the natural balance of the market, to the annoyance of the farmer. But when free export and import is allowed, theſe embarraſſments do not occur. The exorbitant demands of the landholder and farmer are reſtrained by the foreſight of the merchant, who, in his turn, is checked from overſtocking the market, by the certain loſs which would attend that meaſure.

In addition to the unclogged importation of corn, nothing could be more conducive, to the accommodation of farmers, and intereſt of the labouring claſſes in this county, than the eſtabliſhment of public granaries or magazines, in ſome central place upon the coaſt, where corn might be regularly bought and ſold at the current prices. The profit to the undertakers, would conſiſt in their being able to take advantage, of the fall or riſe in the markets. The farmer would, at all times, be ſure of converting his produce into caſh when requiſite, without the delay and trouble of milling his corn, and driving upon chance to fluctuating markets, while the public would be more regularly ſupplied, by the preciſion with which ſuch an eſtabliſhment would enable corn merchants and others to correct the ſcarcity in any particular diſtrict, by a quick ſupply adapted to the demand.

But a ſtrong objection to ſuch an undertaking ariſes from the prejudice entertained in this, and I believe in all other countries, againſt every ſpecies of dealers and traffickers in grain. In all times and countries, under the denomination of meal-mongers, foreſtallers, monopoliſers and other ſimilar terms, have they been the objects of public execration. There is probably no point of political economy more clear to philoſophic and enlightened minds than the advantages which the public derive from that uſeful claſs of men. Their labours unavoidably tend to prevent the extravagant fluctuations in the price of grain, no leſs diſtreſsful to the tenantry than ruinous to the poor. Yet ſo deeply rooted is this prejudice among the lower claſſes in every community, that it would be unreaſonable to ſuppoſe the Ayrſhire populace exempted from an error, which at various times has occaſioned dearth and famine in every age and country.

The operation which trade and manufactures have had on cultivation in this county, is well deſerving the attention of your Board. The harbours of Ayr, Irvine, and Saltcoats *,

* Thoſe ports have only from 9 to 12 feet water at ſpring tides.

were too defective, to admit of trade, ſufficient to produce a direct influence on the character of Ayrſhire huſbandry; and there was no manufacture in the county, except of wretched articles for home conſumption *. But the powerful energies of Glaſgow, Paiſley, Greenock and Port Glaſgow † operated an *inſtauratio magna*, in this reſpect.

The opulence of Glaſgow firſt aroſe from its trade in tobacco, ſugar and other goods, the produce of America and the Weſt Indies. Theſe gave riſe to a great demand for articles manufactured in this country, with which the cargoes imported from the colonies were chiefly purchaſed. Thus the foreign trade of Glaſgow called forth a multitude of manufactures, which overſpread Renfrewſhire and part of Ayrſhire.

When the ſeparation of America from England put an end to the great profits ariſing from the tobacco trade, of which about 50,000 hogſheads, being one half of the total quantity exported from Virginia and Maryland, had centered in Greenock and Port-Glaſgow ‡; the merchants withdrew from a concern no longer profitable, and the habits of manufacture formerly eſtabliſhed in the country, enabled them to apply their capitals to the various branches of iron, glaſs, inkle, linen, woollen, gauze, and particularly of cotton, which, in a few years, they have extended to an extraordinary degree.

About 40 years ago the town of Paiſley was a ſmall weaving place, containing about 4000 inhabitants, chiefly employed in working goods for the Glaſgow merchants and the American market. A gentleman of great merit and ingenuity in that place, deſirous of introducing the manufacture of gauze from Spitalfields, commiſſioned a few pounds of ſilk thread, proper

* The ſhoe and carpet manufactures of Kilmarnock only excepted.

† Theſe towns, are in the counties, immediately adjacent to Ayrſhire.

‡ Theſe are the harbours of Glaſgow, 18 or 20 miles diſtant from that city.

proper for the purpoſe, from London. After various counteractions, to which all new trials or inventions are expoſed, he completely eſtabliſhed the ſilk gauze manufactory in that town, where it has flouriſhed with ſo much ſucceſs, that there are now about 25,000 people in the place. In a ſimilar manner, the manufacture of checks and oſnaburghs was introduced into Glaſgow, about the beginning of this century, by a weaver who had ſerved in Flanders and Germany, as a private ſoldier, during King William's wars, and on his return brought home the mode of working thoſe valuable cloths, which he practiſed with great ſucceſs, till they became a ſtaple article of Glaſgow manufacture *.

Originally, the patterns and deſigns of all fancy-works, modes, and faſhions, were compoſed at Paris, and iſſued out with an abſolute authority all over Europe. But the Paiſley manufacturers eſtabliſhed draughtſmen of their own, by whom their deſigns were compoſed; and the patterns, when executed, were ſent to London and Paris for approbation. By theſe means, the inventive principle of modes and faſhions, at leaſt in reſpect of gauze, was transferred from Paris to Paiſley.

The increaſing demand for theſe articles induced the merchants to extend their buſineſs; and ſilk looms were employed in every village on the northern and eaſtern parts of Ayrſhire.

The linen manufactory had always exiſted ſo far in this county, that every family raiſed flax ſufficient for their own conſumption; and the women were all habituated to ſpin flax upon a ſmall wheel, and to bleach and prepare the yarn, ſo made, for weaving.

The linen cloth thus manufactured, was in general of an inferior quality; and a ſpinner could hardly earn more, with great aſſiduity, than 4d. a-day *. A number of ſmall bleachfields were eſtabliſhed throughout the country; but, inſtead of rivaling the linen manufacture of Perthſhire, or in the north

* See Ure's Hiſtory of Kilbride.

* Suppoſing her to ſpin 12 cuts, or one haſp, per day.

north of Ireland, it was viſibly on the decline in every part of Ayrſhire *.

The women, in all the labourers and farmers houſes, were likewiſe in the habit of ſpinning, on very large wheels, the coarſe country wool. They could not gain more by this kind of ſpinning than 4d. per day, and the work is more ſevere than the ſpinning of flax; as, in order to twiſt the woollen thread, they run out the rolls of carded wool to a great diſtance from the wheel, pacing backwards and forwards 20 or 30 miles in the courſe of a day's work †.

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* Flax has in all ages been reckoned, as well as oats, a robbing crop. Virgil ſays,

" Urit enim, lini, campum ſeges,
" Urit avenæ. VIR. Geor. lib. 1.

Columella confirms this aſſertion.

In Ayrſhire, about 7 pecks of flaxſeed are uſually ſown upon a Scotch acre, and, when the land is well pulverized, and duly weeded, produces, at an average, 20 ſtone of 24lb. Engliſh weight, worth about 12s. per ſtone, 6d. per pound, or L. 12 per acre.—2d. per lb. is paid for ſcutching; 1d. for heckling or hatcheling; and when the flax ſpins into 48 cuts, per lb. it will coſt 16d. for ſpinning.——1 cut, is equal to 5 ſcore threads, or turns of the reel;—2 cuts, make one hear;—12 cuts, one hank, haſp, or ſlip;—4 hanks, or 48 cuts, one ſpindle.

Flax worth 1s. per lb. uſually ſpins from 36 to 48 cuts per pound. Tow, or hards, are ſold as low as 5d.—Flax capable of ſpinning to 7 ſpindles per lb. is worth 7s. Linen cloth for home conſumption, worked in what is called a 1400 reed, coſts about 7d. per yard for weaving, and is worth 2s. and 4d. or half a crown per yard.——Flax in this country, from ſome cauſe or other, ſeems to be by many degrees leſs vigorous and luxuriant, than that round Bruſſels, Cambray, and Valenciennes, from whence the fine lace, and cambrics are manufactured. It has however, generally been ſuppoſed that the Bruſſels and Valenciennes laces, were made from flax of the ſmalleſt ſtem and moſt ſlender texture.

† Wool coſts, for waſhing, teazing, carding, ſpinning, and greaſe, 2s. and 6d. per ſpindle. When worked into blankets, they are worth 1s. per yard, and coſt about 2½d. for weaving.

Home-made woollen cloth, 3 quarters wide, for labouring people, about 3s. per

An attempt, on a ſmall ſcale, has lately been ſucceſsful at Maybole, in the centre of Carrick;—to card, twiſt, and rove woolen yarn by machinery, on principles ſimilar to thoſe applied in the cotton manufacture. And no place can be better adapted for a buſineſs of this deſcription.—Indeed, the improvements in machinery of every kind, within theſe few years, and the application of the inventive faculties of men, in this county, have operated on every object, connected with manufacture and with agriculture.

Other manufactures have been attempted at Cumnock, and ſome other villages, convenient for procuring quantities of moorland wool. But Kilmarnock was the only place, where manufactures in the woollen branch were fully eſtabliſhed; and there, the buſineſs being chiefly confined to carpets, little progreſs was made in the weaving of cloth.

By far the moſt rapid influence, however, on the condition of this country has been produced by the cotton manufactory. The manufacturers of Glaſgow and Paiſley entered very largely into this branch, as ſoon as the invention of Arkwright's machinery was made public. After engaging every eligible ſituation in their own vicinity, they directed their attentions towards Ayrſhire. Cotton mills, on a great ſcale, were erected on the borders of the county, near Lochenoch, and Caſtlo-Semple, and at Cattrine near Machlin, in the central part of Coil. Large houſes, almoſt in every village, were filled with ſpinning-jennies, and moved by horſes, where water could not be procured. The price of labour roſe in every quarter, and the demand for cotton workers was ſo great, that farmers could hardly engage men or women-ſervants, to remain at country work *.

The

per yard when dreſſed. Such cloth dyed blue, coſts for weaving, dying, dreſſing, about 10d. per yard.—The coarſeſt part of the wool is made into carpets, worth 3s. per yard.

* A good worker, in one of theſe cotton houſes, could earn from 2s. to 3s. daily; women from 1 to 2 ſhillings daily; and children from 1s. 6d. to 3s. weekly.

The greateſt part of the cotton, worked in this manner, was furniſhed to the manufacturers, by the Glaſgow merchants, who took them bound to return the thread at certain rates, according to its quality and fineneſs. This circumſtance, renders it extremely difficult to eſtimate the annual amount of cotton thread prepared within the county: But, it is underſtood, that ſeveral thouſand people were employed in this branch, notwithſtanding the recency of its eſtabliſhment.

The operation of the manufacturing ſpirit, iſſuing from Glaſgow, as its central point, diverged over this county, in every poſſible direction, and was by no means confined to the branches already mentioned. A number of workers in tambour and figured works on gauzes, ſilks, and muſlins, eſtabliſhed little factories at Ayr, Irvine, and in other places, where they employed ſeveral hundred girls and children.

A great company from Glaſgow eſtabliſhed two blaſt furnaces at Muirkirk, on the eſtate of the Hon. Admiral Keith Stewart, in the moor-land parts of Ayrſhire *, with a view of making pig and bar iron on an extenſive ſcale; and they already employ many hundred workmen, to the great advantage of that bleak uncultivated country. Indeed, there are few parts of Great Britain ſo well adapted to the iron manufacture as Ayrſhire; having abundance of coal, lime, and ironſtone, in every diſtrict of the county. Poſſeſſing alſo the facility of importing, on reaſonable terms, the rich ores of Cumberland or Lancaſhire, to work with Ayrſhire materials, which are of a poorer quality.

The unſkillfulneſs of iron maſters, however, who remain ſtill ignorant of the right mode of expelling from their coal, or

* The improvements carried on by this gentleman, do great honour to himſelf, and will be attended with much benefit to the country.

The natives are expert in conſtructing what are called ſnap dykes, 5 or 6 feet in height, with large ſtones bound and locked, in an ingenious manner. Theſe, except in great ſtorms of ſnow, enable the young plantations to be defended from the ſheep. Thus ſhelter will be obtained.—Drains, and lime, are faſt changing the appearance of the paſtures; and, with green crops, and ſown graſs in the bottoms, will enable a much larger ſtock, to be maintained.

or cokes, the ſulphureous particles, ſo prejudicial to iron; has occaſioned many eligible ſituations to be rejected, on this account. The enormous expence and uncertainty attending the preſent ſyſtem, on which this manufacture is conducted, together with the myſterious habits, and endeavours of thoſe concerned, to preſerve it in a few hands, has hitherto prevented it from becoming, as it ought, a ſource of opulence to this county.

Having been led for many years, occaſionally to beſtow attention, on the various chemical and practical operations, connected with the modes of ſmelting, and extracting iron from the ſtones and ore in which it is contained, and of reducing it into a malleable ſtate, and into ſteel; it always occurred to me, that there was a radical defect in the whole ſyſtem, which prevails in theſe kingdoms. Under this impreſſion, I laboured, through a multiplicity of experiments, to diſcover the proper mode, of reducing the metallic parts contained in iron-ſtone, and in iron-ore, into a malleable ſtate, or bar iron, in one furnace, by a ſingle proceſs, without recurring to the bungling and expenſive practice, of firſt ſmelting the metallic parts of iron-ſtone into pig, with all the ſubſequent and accumulated extravagance of bloomeries, chaſſeries, fineries, and air furnaces, before a bar of iron can be produced.

I have had the ſatisfaction to ſucceed in this endeavour, and have conſtructed a furnace which performs the purpoſe, mentioned, on ſuch eaſy terms, and on ſo moderate a ſcale, as will enable any landholder, who has a few thouſand tons of iron-ſtone on his eſtate, with an adequate ſupply of coal, to convert it into a malleable form, without hazarding the expence of blaſt furnaces, and other extravagant eſtabliſhments, ſeldom coſting leſs than L. 20,000 or L. 30,000 before a ſhilling of profit is received. But, as this diſcovery does not refer, to matters of agriculture, I ſhould not have alluded to it in this addreſs, had it not appeared materially connected with the general improvement of the county, under our conſideration.

There is another article in which the county might derive advantage. The quantities of ſea weed, driven by every ſouth and weſt wind, on its extenſive ſhores, have been ſuffered to rot upon the ſand, unleſs a few carts, occaſionally lifted for manure, and a ſtill ſmaller proportion of the ſea weed growing upon rocks along the ſhore, which has been converted into kelp. The great demand for this article, ariſes from the foſſil alkali which it contains, ſo uſeful for the purpoſes of glaſs; eſſentially requiſite in the manufacture of hard ſoap, and alſo applicable to various proceſſes in bleaching yarn. As the foſſil alkali is obtained from the different plants called wrack, ſea-weed, or alga marina, and from no other plant, excepting the barilla, which grows on the ſhores of Spain and Sicily, its value has been conſtantly increaſing, with the manufactures, in which it has been employed. A ton of Barilla ſells from L. 20 to L. 30; and a ton of common kelp from L. 4 to L. 5. and ſometimes much higher.

The mode of manufacturing kelp upon the ſhores of Ayrſhire, and indeed on all the coaſt of Scotland, is barbarous in the extreme. An open kiln, or maſs of ſtones, is placed upon the ground, about 14 feet long, 3 feet wide, and a foot or two in height. The ſea-weed being previouſly cut and dried, is thrown into this kiln. The bottom is laid with ſand and gravel, which impairs the kelp, and diminiſhes its value. The ſea-weed, in the centre of the kiln, may be ſufficiently heated to bring it into fuſion, but that nearer the outſide is chilled by the external air; and the whole, even in the beſt ſummer

* Foſſil alkali, is the baſis of ſea ſalt, combinedwith muriatic acid, but no practical mode has yet been deviſed, for extracting the alkali on advantageous terms.

The vegetable alkali, or potaſh, though very valuable, is by no means applicable to all the purpoſes in which the foſſil alkali is employed.

Above 2500 tons of foſſil and vegetable alkali are ſaid to be annually imported into Great Britain, and including kelp manufactured in Scotland, amounts to L. 7 or 800,000, per annum.

ſummer weather, is never brought properly into one equal maſs of fuſion. In this mode it is hardly practicable to make more than half a ton per day, in one kiln. The weed, which, by the power of fire, has undergone the different proceſſes, of evaporation and incineration, is brought at laſt into a melting ſtate. It is then violently ſtirred with rakes and ſhovels; and when cooled remains a brown or blueiſh concrete ſubſtance, hard as a rock, pungent to the taſte, and liable to attract moiſture from the atmoſphere. But imperfect as this operation is, it cannot take place at all, neither in rain, nor in wind, nor in froſt. So that the proceſs, requiring a long courſe of fine weather, for drying and burning of the wrack, can only be attempted during a few months, and, in bad ſeaſons, only during a few weeks in ſummer.

In order to obviate theſe difficulties, I have contrived a kiln or furnace, which, with an apparatus ſufficiently oeconomical and ſimple, dries, burns, and reduces into perfect fuſion, the ſea-weed in all weathers, and renders it a maſs of kelp, pure and equal in its parts, and capable of being thrown in a mould or frame. Thus every ſample is a true ſpecimen of the whole, and contains no other refuſe, than the earthy or heterogeneous parts belonging to the weed. Theſe, by repeated experiments, amount to about 50 per cent, and the other half is taken up in ſolution, when the maſs is pounded and mixed with a ſufficient quantity of water. The refuſe is mere inſipid uſeleſs earth. The 50 per cent, taken up in ſolution by the water, contains all the ſaline and alkaline particles of every kind contained in the kelp. Of theſe, a great proportion are compoſed of common ſalt; others of ſal-glauber; ſome of hepar ſulphuris, while the remainder is pure alkaline ſalt. Theſe, by an expenſive and elaborate proceſs, may be perfectly diſtinguiſhed, according to the priority in their form and ſyſtem of cryſtalliſation, which enables them to be completely ſeparated.

Experiments, which I have frequently repeated, prove, that Barilla contains nearly the ſame proportion of refuſe, but the

falts extracted from it by ſolution, poſſeſs a much greater proportion of alkali, as the common ſalt, Glauber ſalt, and hepar ſulphuris, do not predominate in that preparation *.

As this proceſs may be of material conſequence to the great and ill conducted manufacture of kelp, in the Highlands of Scotland, eſpecially now, that the duty on coals carried coaſt-ways has been taken off, I ſhall chearfully communicate the particulars of this plan, to any perſon recommended by your board †.

The gentlemen in this, as in other parts of Scotland, under the influence of old feudal prejudices, had originally been extremely hoſtile to all manufacturing and mercantile tranſactions. But the enormous increaſe of rents, occaſioned by manufactures, and the riſe on all articles of ſubſiſtence, had conquered theſe hoſtilities; and of late years they had very generally afforded unqualified favour and protection, to the propoſers of new eſtabliſhments, in the way of manufacture. Two material circumſtances, however, have occurred to damp their zeal in theſe engagements.

In the firſt place, it is neceſſary to conſider every country, and every branch of public operation, under the different gradations of an advancing, ſtationary, and declining ſtate. During the former of theſe periods, the augmentation of manufactures, operates with moſt ſalutary impulſe, on every branch of agricultural improvement, and of public proſperity. During the

* The baſis of common ſalt, is foſſil alkali combined with muriatic acid. The baſis of ſal-glauber, is foſſil alkali combined with vitriolic acid. The hepar ſulphuris is compoſed of alkali combined with ſulphur; and ſulphur conſiſts of vitriolic acid and the inflammable principle, ſuch as is produced by burning wood or charcoal.

† The abolition of duties on coals carried coaſtways, has conferred a greater benefit on thoſe parts of Scotland which were intereſted in that meaſure, than any bill paſſed theſe many years. It is to be hoped, that the Right Hon. Mover, through whoſe exertions that bill was carried into effect, will add to his own fame, and to the advantage of his country, by moving the abolition, or commutation, of all duties and reſtrictions on the uſe of rock-ſalt, and on the manufacture of that uſeful article.

the ſecond, they may be conſidered as in a kind of neutral ſtate; but in the laſt, or declining period, they become a ſerious burden, and diſtreſs, on every order of the community. This is verified, by hard experience, in ſome provinces of England, where every propoſal of a new manufacture is conſidered as a grievance and injury committed againſt the proprietory intereſt.

Although Ayrſhire, and the Lowlands, on the weſt of Scotland, have for many years experienced a rapid and progreſſional improvement; yet every caſual check to circulation, every accidental overſtrain, or injury to credit, from whatever cauſe ariſing, has conſtantly ſubjected the country to the diſtreſsful ſcene of numberleſs manufacturers grumbling, unemployed, and deſtitute.

In the preſent inſtance, ſpeculations in cotton, muſlin, iron, glaſs, and other articles, had been ſtretched to an extravagant degree. The quantity of ſpare money, and growing opulence of the country, occaſioned an extreme facility of credit. The banks were led to grant caſh accounts, or to diſcount bills almoſt without reſtriction. The conſequences were, that every man engaged in profitable ſpeculation, no ſooner gained a ſum, than, inſtead of conſidering it as a capital, to yield an eſtabliſhed income, he expended it, with as much more as he could borrow or procure, in extending his adventures, truſting always to the growing increaſe of advantage. Thus, a man who had gained L. 20,000 by twiſting cotton yarn, with Arkwright's machinery, would build another mill of double power, and expend L 20,000 beſides the profit he had made. By theſe means, inſtead of becoming more eaſy and comfortable in his circumſtances, every new ſucceſs involved him in additional adventures and conſequent embaraſsment.

While general proſperity pervaded every branch of buſineſs, the exceſs of enterpriſe, and daily failures which occurred, were only conſidered as indications of individual extravagance, or accidental misfortune. But the firſt public event, occaſioning a pauſe among the ſpeculators, which happened

to be a declaration of hoſtilities on the part of France, acted like the injection of cold water into a ſteam engine; condenſed the unſubſtantial vapour, and the wholefabric came tumbling down.

The chartered banks of Scotland, in imitation of the bank of England, finding that the minor operators had trenched on their advantages; and obſerving alſo, that the competition had involved them in a credulous, and hazardous exceſs of circulation; acting with a precipitancy, only equalled by their preceding relaxation, inſtantly recalled the credits they had ſo largely granted. Thus a country, which, a few months before, enjoyed the heyday of proſperity, was ſuddenly cramped and palſied in every operation. Traders, manufacturers, miners, graziers, farmers, and landholders, all of whom had overſtrained their ſpeculations, found like Alnaſcar, that their baſket-full of brittle contents was broken. The conſequences were, that a clamour was attempted to be raiſed againſt the moſt juſt, neceſſary, and unavoidable war, in which this country ever was engaged; at a moment too, when the conſequences of hoſtility could not poſſibly have materially affected any individual. Againſt this poſition, it is preſumed that no one will contend, except thoſe who would rather hazard, civil ſtriſe or invaſion at home, than hoſtility abroad. Sober and reflecting men, however, recollect, that many of thoſe ſpeculators, who have failed for ſeveral hundred thouſand pounds, were never worth as many pence at any period of their exiſtence. That the ſtoppage which occurred ſome years ago, in the cotton manufactury originated in the ſame cauſes, and as far as it extended, proved equally ſevere, although the country then enjoyed profound and general peace. Above all, that in the year 1772, the contagious diſtemper of overſtrained adventure, ſimilar to that which has come to a criſis in 1793, involved the country in general diſaſter, although the kingdom had not then been engaged in war for a period of 13 years.

Theſe facts, undoubtedly, expoſe the unſound principle,

which

which has governed this country, reſpecting debts and circulation. The creditor is betrayed into pernicious confidence, by ſevere enactments againſt the perſon of the debtor, who in his turn, is allured by the ruinous facility with which credit is obtained, by habits of extravagance, or ill-founded hopes of irregular advantage. In former times, the moſt rational improvement was checked by a total want of credit, even to the moſt reſponſible perſons. At preſent, the country is periodically convulſed, by ſhocks, failures, and ſtagnations, ariſing from a defective and diſordered ſyſtem. Indeed, the acts in force, on the ſubject of debts and debtors, would tempt one to ſuppoſe, that a writ and a bumbailiff were conſidered as ſpecifics for every evil which creditors, or the country at large can ſuſtain from ſuch tranſactions *.

But there is another point of view, in which the manufacturing part of the community are ſtill more liable to imputation. It is by this claſs, that every doctrine of ſubverſion has been cheriſhed; and it is only from the ſame ſource that the eſtabliſhed orders ſeem to dread any diſturbance. When perſons of this deſcription, joined by others of diſtempered minds, inſult ſociety with permanent ſittings, bulletins, ſecret committees, ſections, municipalities, conventions, and tocſins, to which, had they proved ſucceſsful, the Guillotine, in due ſeaſon, would have been added, it is time for the ſounder part of the community to form a phalanx round the Throne, in defence of the conſtitution. For it is to be hoped, that the ſubverters

* Some purſe-proud perſons talking of their wealth, were anſwered by a Glaſgow merchant,—who humouroufly boaſted, that he owed more than all of them were worth. This ſeems to be the prevailing ſentiment, which governs the mercantile, manufacturing, and, I may add, the agricultural, proceedings of the country.—The example of France might have taught us, that whenever the diſburſements exceed the receipts, whether in a public or private capacity, the conſequences muſt be ruinous. Perhaps it might be more for our permanent intereſts, rather to imitate the practice of Holland, where every man's exertions are proportioned to his means; and where no man can preſerve his character, and be in debt.

verters in this country will not, like the murderers in France, find a ſet of daſtards, ready to ſhrink from their atrocities, or tamely ſubmit to robbery and ſlaughter. In this country we may flatter ourſelves, that if matters ever come to extremity, every good ſubject will be found, in the words of Shakeſpeare, " at leaſt with harneſs on his back !".

The reſult from this deduction is, that whatever benefits eventually may have accrued, to the cultivation of Ayrſhire, from the ſtimulus of manufacture; ſtill it is a dangerous inſtrument of improvement; while the plough and the ſpade have never threatened any peril to the country.

So far, however, from wiſhing to disjoin theſe intereſts, that it ever has been my deſire to ſee them moving hand in hand. At this very moment, in conjunction with other proprietors, being engaged in every poſſible exertion to eſtabliſh a harbour at the Troon, on this coaſt, and a canal from thence to Kilmarnock. And I truſt, ere long, another ſhall take place from Irvine to Paiſley, ſo as to give every advantage to the circulation of manufacture and produce in the county.

It only remains for me to offer ſome concluding obſervations on the character and habits of the different claſſes, into which the inhabitants of Ayrſhire are divided.

From the facts already ſtated, it muſt appear that they are neither deficient in activity, nor in enterpriſe, and that little more is wanting than to direct thoſe valuable tendencies to proper purpoſes. The indolence of former times, and feudal prejudices among the upper orders, which formed lines of demarkation and repulſion between them, have fortunately been modulated into more active and more eaſy habits. Improvements in dreſs, living, and conveniencies of life, have increaſed beyond all credibility. But the manners and morals of the different ranks, have by no means ameliorated, in the ſame proportion. On the contrary, the civil cordial manners of the former generation are wearing faſt away, and in their place is ſubſtituting a regardleſs, brutal, and democratic harſh-

neſs

neſs of demeanor. The former race, it is true, waſted their time in ſauntering diverſions, in ſmiths ſhops, and change-houſes. But a ſtrong ſpirit of religion, and deep impreſſions of morality, not unmingled with ſome portion of auſterity, preſerved the general character more free from crimes, and groſs enormities, than the people of any country in Europe, perhaps, thoſe of Switzerland alone excepted.

A variety of circumſtances have concurred to efface theſe impreſſions. The trade of ſmuggling, which, to a great extent long prevailed on this coaſt, naturally introduced a looſeneſs of practice and opinions. Hence, aroſe the pernicious cuſtom of drinking ſpirits, ſo generally prevailing, as almoſt entirely to have excluded the conſumption of ale and beer. Theſe evils were extended and confirmed by the diſtilleries, which though checked in their progreſs by recent regulations, are ſtill deſtructive to the health and diſpoſitions of the people. Another ſource of immorality and perverſion of principle, ariſes from the frauds and perjury, too frequently occaſioned by the mode in which the buſineſs of the cuſtoms and exciſe is conducted.

To theſe, are added a great increaſe of dealings and tranſactions, in every line of life *. The levelling manners ſo prevalent among manufacturers; the frequenting of fairs and markets; the numberleſs jobbings, ſales and bargains, all tend to ſubſtitute a turn for ſpeculation, in place of the ſober, ſteady principles of order and economy, which Doctor Adam Smith, in his excellent treatiſe on Moral Sentiments, expreſsly ſtates as conſtituting the eſſential ingredient, or rather the diſtinctive character of virtue, attaching to the lower claſſes of the people. From whence that great authority avers, they never can deviate, without ruin to their families, becoming a diſgrace and burden on the country, or falling a prey to the moſt diſſolute and vicious courſes.

* This increaſe of tranſactions, and its natural conſequence litigation, is ſo great that 40 cauſes are often adviſed in a week, before the Sheriff Court; and there are not leſs, than 700 or 800 cauſes tried in a year, before that tribunal.

To correct theſe evils will require a better and more ſyſtematic plan of education than hitherto has been adopted. The people of this country have ever been diſtinguiſhed for a laudable deſire to procure inſtruction; inſomuch, that the pooreſt perſons will frequently ſtarve themſelves to educate their children.

It is undoubtedly incumbent on the public to grant ſuch means of education to individuals, as may enable them to become uſeful members of ſociety. It is the immediate duty of the landholders in every pariſh to ſee, not only that the poor are properly maintained, but that the children be inſtructed in principles of ſound religion and morality; that they be trained to induſtry, and afforded means of uſeful information, adapted to their capacities and ſituation *.

Unfortunately in this country, as in other diſtricts of the kingdom, the proviſions for the ſchoolmaſters are by no means adequate. Men of capacity and talents can hardly be expected to waſte their lives, in the laborious taſk of teaching, for a ſmaller ſum than they could earn by handycraft. Beſides a houſe and garden, and the uſual ſalary, at preſent, not more than 6l. or 8l. yearly, ſometimes augmented by the trifling perquiſites of parochial offices, they ought to have an addition of emolument, by an increaſe of ſalary. No man ſhould be nominated but ſuch as is capable of making reports, ſurveys, eſtimates, keeping ſtatiſtical regiſters and records, and other operations, by which he might better his condition, and be uſeful to individuals and the public. It is frequently remarked too, in this part of the country, that they are extremely neglectful of the manners of the riſing generation, rather encouraging them in rough and booriſh incivilities, than in thoſe acts of reciprocal kindneſs and urbanity, which afford the

* On this principle the inhabitants of the United American States have diffuſed a maſs of knowledge through every diſtrict of their extenſive territories, which is faſt rendering them more ſkilful and enlightened than any other claſs of men.

the beſt, and moſt pleaſing characteriſtic of any people. A perſevering attention, however, from the landholders and clergy, with a proper ſelection of ſchoolmaſters, and regular examinations of the progreſs, made by the ſcholars, would check the growth of theſe diſorders.

To the clergy of this county, the public is already much indebted, and may derive ſtill farther benefit from their exertions. The intelligence and underſtanding which diſtinguiſh the individuals of this deſervedly reſpected order, together with their profeſſional intercourſe, among all claſſes of their pariſhioners, render them peculiarly adapted for the propagation of uſeful knowledge; not in matters of religion only, but touching temporal concerns, connected with the welfare of the community. The valuable Statiſtical reports, which you have received from the miniſters of every pariſh in this county, with the exception only of one at preſent vacant, evinces their ability to promote improvement, and the attention they have beſtowed on that intereſting object.

With reſpect to the upper claſſes of proprietors, or freeholders, and commiſſioners of ſupply, there are about 180 perſons of theſe deſcriptions *, (of whom 114 are voters) belonging to the county, with eſtates from 100l. or 200l. to 20,000l. *per annum* †. Several of theſe families have been of very ancient ſtanding; but the greateſt number of old families have, within the preſent century, been obliged to ſell their property, embarraſſed by the reigning ſpirit of conviviality, and ſpeculation, diſproportioned to their income ‡.

 Indeed,

* There are alſo 5 or 6 Peers families, of great property.

† The largeſt eſtates in the county are about 10,000l. per annum; but the holders of them have property in other counties, which make their income 20,000l. per annum.

‡ Many farmers have remained on the ſame lands for 300 or 400 years, and every right minded landlord gives of courſe the preference to old tenants. It is difficult, however, to obtain any conſiderable riſe of rent, or to introduce a ſyſtem of improvement, but by means of new ones.

Indeed, conſidering the expence, and inattention to affairs, connected with the ſituation of a country gentleman, and natural tendency of counting upon imaginary rentals, long before they become real ones; including too, the prevailing courſe of entertaining, drinking, hunting, electioneering, ſhow, equipage, and the concomitant attacks upon the purſe, and miſapplication of the time, it appears ſurpriſing that any property unentailed, ſhould remain above two generations in the ſame ſucceſſion; eſpecially, in this part of the iſland, where the gentry have not, as in England, the reſource of clearing from time to time, their pecuniary embarraſſments, by large ſales of timber from their woods, hedge rows, and plantations.

Without adopting any feudal predilection for birth and family, it ſurely ſeems deſirable, that courſes which have proved generally ruinous to the intereſt of proprietors, and in conſequence have been attended with ſuch ſerious checks to cultivation, and interruptions to proſperity, ſhould be corrected.

The country has a right to look to this claſs of men, not only for ſtability of character, urbanity of manners, and that ſentiment of honour and humanity, which conſtitutes the liberal features of a gentleman; but for the encouragement of all that is excellent in arts, embelliſhing or uſeful in the intercourſe and tranſactions of human life. In the preſent ſtate of things, men of high degree are only reſpected in proportion as they poſſeſs theſe qualities. When they happen to be marked by unpoliſhed manners, or diſgraceful conduct, they excite no other ſentiments than thoſe of indignation or contempt.

Unfortunately, the landed proprietors, in this, as in all other quarters of the kingdom, were formerly accuſtomed to conſider themſelves, in reſpect of their eſtates, as merely *Fruges conſumere nati*; and in general were inclined to think, that they had nothing more to do than draw their rents and ſpend them, unmindful of the obligations impoſed by the intimate relation which they hold with the proſperity and welfare of the country. But now a better ſpirit has gone forth among them;

and

For remark
obſe

and undoubtedly, when ſuch ſtrong endeavours have been made, to decompoſe the principles and elements of which all civilized ſociety is compounded, it requires the beſt exertions of every well-intentioned individual, to prevent ſo miſchievous a proceſs from being carried into effect. Landholders, whatever their purſuits in life may be, are now generally conſcious, that they owe their firſt duties and attentions to their tenants and eſtates. It is juſt matter of reproach for any man to be ignorant or careleſs in his trade, more particularly when the right performance of that trade involves the welfare of the moſt uſeful claſs of men, and the means of ſubſiſtence on which the whole community depends.

Examples of
land, and th

If it could be neceſſary to enforce ſo plain a truth, the landed intereſt of this county might receive abundant admonition from the examples of England, Ireland, and the Highlands of Scotland.

In the greateſt part of England, all the ties of intimacy and attachment between the landlord and the renter are entirely broken, to the detriment of both. In Ireland, at leaſt in many parts of it, owing to the evil ſyſtem under which the land is let; neglect of education, and other circumſtances, originating perhaps from inattention or miſconduct in the landholders, the actual occupiers of the ſoil are poor and wretched, and impoveriſh the moſt fertile parts of the three kingdoms; often endangering the lives of any perſons, who attempt to improve their country or themſelves. In the Highlands of Scotland a ſyſtem and order of ſociety did prevail, which, although unfriendly to the arts of cultivation, called forth ſome of the beſt principles, and warmeſt attachments of the human heart; uniting, by mutual claims of permanent regards, the different claſſes, *under ſuch ſtrong connections, and nice dependencies*, as nothing but the avarice, extravagance, and inattention, of the higher ranks could have diſſolved.

Perhaps the beſt bleſſings, which your Board can poſſibly beſtow upon the country, will ariſe from reſtoring to their proper order, thoſe neceſſary relations, which never can be inverted

r remarks and additional observations.

without detriment and danger. As the Diplomatic were rendered eminently uſeful in France *, by collecting portant political information in other ſtates, for the uſe o kingdom; ſo it is to be hoped that the Britiſh Governme means of your Board, will procure for us, a maſs of k ledge, on the general ſubjects of improvement, unequall any other age, or country.

At all events, the public truſts to your eſtabliſhmen diffuſing every uſeful fact, and aſcertaining every ſolid p ple that ought to regulate the management of land a productions. At the ſame time, the energy with which career has opened, affords well grounded expectation, tha will perſevere, under the impreſſion, ſo happily deſcrib [redacted], who thought nothing done, while any thing rem to be performed.

Nil actum reputans, ſi quid ſupereſſet agendum.

* See particularly the valuable work called, "Memoires concern "Impoſitions et Droits en Europe."

FINIS.

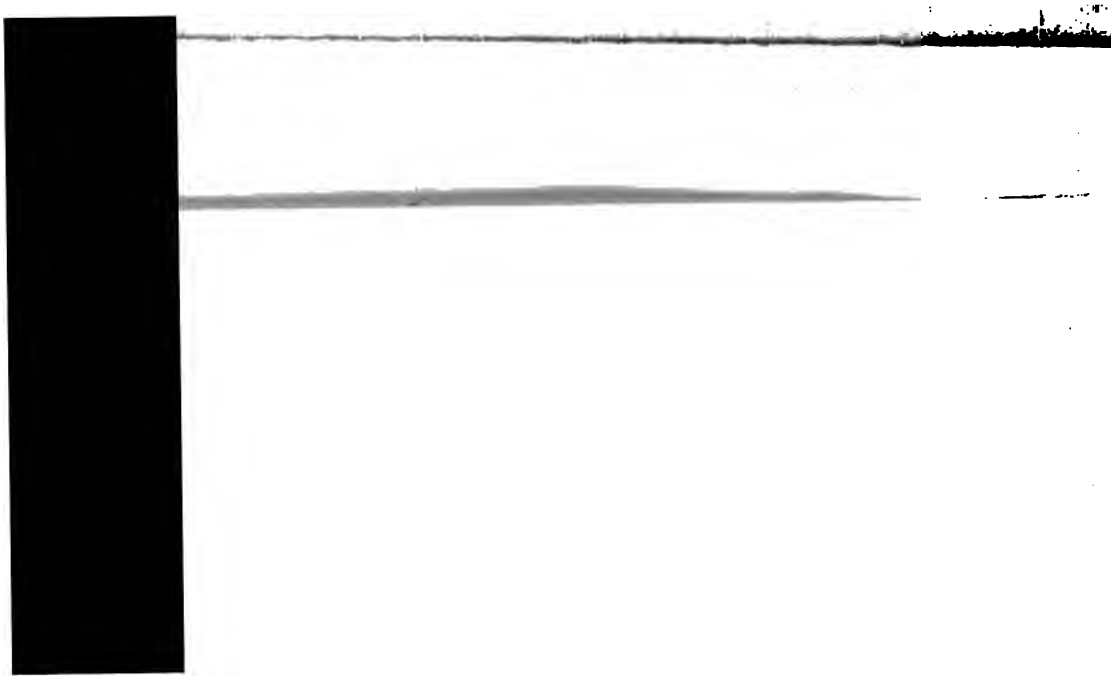
f AYRSHIRE.

Carrick, 201,603 Scotch acres, equal to 253,44
Ayrshire, 526,603 Scotch, or 662,005 Englifh.

Extent in Scotch Acres.	General Observations.
	Soil various. Much light and improveable land.
	Chiefly paſture. Wild moors. Sow 600 quarters of grain. 6000 acres rented at L. 50.
10,000	Chiefly paſture. About 1400 acres under tillage. Land lets f per acre. Few horſes, few ſheep, chiefly cattle.
	Two thirds hilly paſture. Low parts arable. Along the ſhore coal and lime.
17,000	Soil various. Great part arable. Large tracts of moor. P lime and marle.
6000	Alehouſes 50. 3000 People manufacture goods worth L. 9 Soil a ſtrong clay, all arable.
	Partly clay. Partly moor and moſs.
	All arable. Sell cheeſe to the amount of L. 4000 per annum. About the year 760, ſold linen yarn, worth L. 16,000 an ritable aſſociations.
	A ſmall ſhallow harbour. Several charitable aſſociations. The duſtrious and affluent, without manufactures.
	All hilly. Quantities of flax raiſed, uſually ſown after potato of cloth annually ſold, worth about 1s and 3d per yard,
about 12,000	About one third not arable, remainder good land, capable of ment. Coal and lime in every part of the pariſh.
	Port of Saltcoats. ſmall but capable of great improvement. of coals ſhipped for Ireland. Nine tenths arable, but chiefly
	Little cultivated. Extends along the Clyde.

ing, annually. Population in 1735, 59,039 ſouls. I

hem having addreſſed them reſpectively for the deficient informati



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GENERAL VIEW

OF THE

AGRICULTURE

OF THE

OUNTY OF NAIRN.

GENERAL VIEW

OF THE

AGRICULTURE

OF THE

OUNTY OF NAIRN,

THE

EASTERN COAST OF INVERNESS-SHIRE,

AND THE

RISH OF DYKE, AND PART OF EDENKEILLIE,

IN THE

COUNTY OF ELGIN, AND FORRES.

BY JAMES DONALDSON,

FACTOR FOR THE HON. WILLIAM RAMSAY MAULE, OF PANMURE.

Brit. DRAWN UP FOR THE CONSIDERATION OF

E BOARD OF AGRICULTURE AND INTERNAL IMPROVEMEN

LONDON:

PRINTED BY B. MILLAN,

PRINTER TO HIS ROYAL HIGHNESS THE PRINCE OF WALES.

M.DCC.XCIV.

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TO THE READER.

IT is requested that this paper may be returned to the Board riculture, at its Office in London, with any additional Remarks and Obser is which may occur on the perusal, written on the Margin, *as soon as may venient.*

It is hardly necessary to add, that this Report is, at present, prin l circulated for the purpose merely of procuring farther information respect Husbandry of this District, and of enabling every one to contribute his mite improvement of the country.

The Board has adopted the same plan in regard to all the other Co in the United Kingdom; and will be happy to give every assistance in ver, to any person who may be desirous of improving his breed of Cat eep, &c. or of trying any useful Experiment in Husbandry.

London, March 1794.

COUNTY OF NAIRN, &c.

INTRODUCTION.

THE tract of country proposed to be described, lying towards the 58° of N. latitude, comprehends the parish of Dyke, and part of Edenkeillie, in the county of Moray, the whole of the county of Nairn, and the eastern coast of Inverness-shire, to the mouth of the river Beaulie, from whence the extent along the Moray Frith, its northern boundary to the river Findhorn, is forty English miles. The county of Nairn stretches from the coast southerly to Lochinderb, about twenty miles, where it terminates nearly in a point between the counties of Elgin and Inverness. Its breadth along the shore is twelve miles; its sides extend to twenty two miles about the middle, from whence they begin to approximate each other. Exclusive of the hilly part of the district, it may be described as a narrow border of level ground along the shore, from one to nearly six miles in breadth.

RIVERS.

1st, The river Beaulie, issuing from Loch Monar, in the western hills of Ross-shire, terminates the Moray Frith at Lovat, after a course of nearly sixty miles.

2d, The river Ness. Descriptions of the course of this river are already before the public*, and the practicability of opening a communication to the Western Ocean, at Fort William, by joining Loch Ness to Loch Eoich, and that to Loch Lochy, and thence to the sea, has been satisfactorily establish-

* By Dr. ANDERSON, and others.

ed;

ed; therefore it is only necessary to notice here, that this river forms the harbour at the town of Inverness.

3d, The water of Nairn takes its rise in the hills of Inverness-shire, and after a course of nearly thirty miles, falls into the Frith at the town of Nairn. It is of little consequence, forming no harbour, and for salmon fishings yielding only a rent of about 80l. sterling.

SOIL AND CLIMATE.

The soil of this district lying under a climate almost as favourable as any in the kingdom, appears to be of three qualities. From the river Findhorn to the water of Nairn, comprehending the parishes of Dyke and Auldearn, the soil is a rich free loam, generally on a sandy or gravelly bottom.

From Nairn to Inverness, comprehending the parishes of Nairn, Airderseer, Calder, Croy, Petty, and part of Inverness, it is a light sandy soil; and from the river Ness to Beaulie, including the low part of the parish of Inverness, and the parish of Kirk-hill, the soil is either a stiff rich clay, or a sharp gravelly mould.

In the hilly part of the county of Nairn, the arable land is but in a small proportion to the waste; the soil is a sandy loam, full of gravel and small stones, except on the banks of the brooks, where it appears less mixed. In this quarter the climate is more cold and stormy than on the coast, and the productions of the soil are somewhat later. Yet the crops are never cut off by frost, nor is the harvest greatly more retarded by the autumnal rains than that of their neighbours in the more favourable situations.

There is a curious singularity connected with the soil of this district, namely, the sand which has nearly overwhelmed the estate of Cowbin, and which happened some time prior to the Act of Parliament 1695, cap. 30, the narrative of which bears,

bears, " That the barony of Cowbin, and house and yards " thereof, is quite ruined, and overspread with sand."

It appears that the sand washed up for ages by the tide on the coast towards the western limits of the parish of Dyke, was at last drifted by a storm of wind from the west, over the estate; one farm of which, now rented at about 80l. alone remains, from which the land-tax and other public exactions are paid for an estate rated at nearly 1000l. Scots, of valued rent, and which at present would probably, but for this accident, have rented at 800l. sterling a year, or upwards.

The extent of this calamity is not limited to the barony of Cowbin; it changed the efflux of the river Findhorn, by which a part of the estate of Maurton was destroyed, and drifting eastward for more than ten miles, buried a great extent of fine land in the parish of Duffus. But although this evil has not been felt on the east side of the river Findhorn during the present generation, yet its consequences are in a high degree to be feared. Besides the large extent of plain which it occupies, to the height, it is supposed, of the fruit-trees in the garden of Cowbin, a vast body is accumulated in a ridge of hills, called the hills of Mavistone, of strikingly conspicuous magnitude; these hills are observed to be gradually progressive, the sand drifting from the west, and settling on the lee of the east end. And there is reason to believe, that during the course of the last forty or fifty years, it has advanced eastward more than 100 yards.

Besides extending and promoting the growth of bent, a vegetable so peculiar to this soil, the landlords who are exposed to this dreadful visitation might certainly adopt some plan for fixing the sand within its present bounds. But it is neglected by all concerned, as if its encroachments were not to be apprehended, or as if they were in no degree prejudicial.

The periods of wheat seed time and harvest which commenced on a particular farm in the neighbourhood of Inver-

ness for the last four years, as stated below, will shew the earliness of the season.

Wheat seed commenced in -	1790,	9th November.	
- - - -	1791,	4th November.	
- - - - -	1792,	1st September.	
- - - - -	1793,	19th October.	
Oats and peas seed commenced in	1791,	2d March.	
- - - - -	1792,	3d March.	
- - - - -	1793,	20th February.	
Barley seed commenced in -	1791,	16th April.	
- - - - -	1792,	10th April.	
- - - - -	1793,	26th April.	
Harvest commenced on the same farm in - -	1790,	6th Sept. & finished	19th Oct.
- - - - -	1791,	27th Aug. —	1st Oct.
- - - - -	1792,	30th Aug. —	9th Oct.
- - - - -	1793,	5th Sept. —	16th Oct.

TOWNS, POPULATION, AND MANUFACTURES.

In this district there are two royal burghs, Inverness and Nairn, situated at the distance of eighteen miles from each other. The population of the town of Inverness amounts to 5257, and that of Nairn to 1400; there are also three villages, Dyke, Auldearn, and Campbeltown, which may contain from 50 to 100 houses in each.

There is a thread manufactory at Inverness, from which, on an average of the last seven years, there has been exported in white and coloured threads, to the extent of 13,000l. sterling yearly. There is also a canvas and sail-cloth manufactory established there, from whence is exported annually upwards of 300,000 yards.

There is another species of manufacture carried on to a considerable extent in this district, that of the spinning of yarn. The flax is sent here by the merchants in Aberdeen, Dundee, Glasgow and Paisley, and returned to them in yarn. There is also a considerable quantity of timber and merchant goods

carried in open boats along the coast, to Caithness and the Orkney islands.

From the port of Inverness there is exported annually raw wool to the value of 500l. sterling, and skins or peltry to the amount of 1200l.; but these last articles are the produce of the counties of Inverness, Nairn, and Ross-shire, at large.

Though there is a great quantity of grain annually exported from that extent of coast, under the jurisdiction of the custom-house of Inverness, yet the quantity exported from the district now under review is very inconsiderable, the grain that can be spared by the farmers being in general requisite for the maintenance of the inhabitants of the towns and villages, and of those of the more remote parts of the Highlands.

In the town of Nairn, though pleasantly and commodiously situated on the banks of the river, near the shore of the Frith, and having the advantage of the great north road passing through it, there are no manufactures of any kind: some of the respectable inhabitants of the town seem extremely anxious to introduce some manufactories, in order to give employment to the inhabitants; and were the proprietors of the county to give their aid, there is little doubt but this desirable object might be attained.

To the nine parishes already mentioned, that only of Ardclach, in the hilly part of the county of Nairn, remains to be added, and the whole population, exclusive of the troops occasionally resident in Fort George, amounts to a little above twenty thousand.

STATE OF PROPERTY.

In this district there are six proprietors, having each from 1000l. to 2500l. sterling a year; and twelve more, having each from 200l. to 800l. a year; the remainder, including the burgh lands of Inverness and Nairn, is divided into small states, under 200l. sterling a year, amounting in all to 16,000l.

sterling of yearly rent, exclusive of the rent of the salmon fishings of Beaulie, Ness, and Nairn, which amount to 1870l. sterling.

LAND, RENT, AND TENOR OF LEASES.

Although the greater part of the proprietors reside in the district, yet it is plain that very little attention on their part has been bestowed in promoting the improvement of the lands occupied by the tenants: such of the heritors, however, as reside on their estates, have carried the improvements of their own farms as high as the generality of the kingdom.

Mr. DAVIDSON of Cantray, has in every particular extended his attention in the most judicious and successful manner, beyond his own farm, over the whole of his estate, which he found, about twenty years ago, when he came to reside there, bleak, poor and sterile in the extreme; but it has now assumed an appearance of neatness and fertility superior to any other in that part of the district.

There is but a very small proportion of this country possessed by the tenants under leases in writing; scarcely one-tenth of the whole. Some of the leases are of endurance for seven years, others for eleven years, and a few for two nineteen years; but the greatest number are for nineteen years. There is no rotation of croping laid down in the leases, nor (with a very few exceptions) is there any provision made as to draining, inclosing, or leaving the lands in good condition at the end of the lease.

The general run of the farms pay from 15l. to 20l. of yearly rent, burdened however in many cases with services, carriages, mill restrictions, and a variety of small exactions in kind, called *customs*. There are, however, a few farms of from one to three hundred acres.

Tenants

Tenants enter into possession of houses, gardens and natural pasture, at the term of Whitsunday, and to the arable land at the ingathering of that year's crop.

The rents are paid partly in money, in grain, and in oatmeal; the money rent is paid at Martinmas, after reaping the crop, and the victual in March or April thereafter. It should be remarked here, that the tenants on some estates in this district are obliged to pay their farm meal at the rate of nine stone and a half, and sometimes ten stone for the boll, a practice, it is believed, little known in any other part of the kingdom.

The average rent by the acre over the whole district, exclusive of the natural pasturage, may be estimated at 13s. from which, however, the lands about the burghs of Inverness and Nairn, and around the villages above-mentioned, are to be excepted, where in some cases the rents have risen from 2l. to nearly 5l. the acre.

THE MODE OF MANAGEMENT, AND IMPROVEMENTS OF HUSBANDRY.

Although the proprietors, and the few more opulent and intelligent farmers, have introduced fallow, green crops, and sown grass into their practice, yet no stated or regular rotation of croping is here followed, unless that ancient system which seems to have been the general practice before the æra of the Reformation, and which is still almost universally practised here by the ordinary and inferior class of tenants, should be accounted a regular rotation. Almost the whole of this country being uninclosed, the tenants are still accommodated with natural pasturage for their cattle, either in the downs along the shore, or in the moors towards the bottom of the mountains. On this account a very small proportion of the arable land is considered as requisite for the pasture of

the stock on the small farms, a part of which, almost on every farm, consists of a small flock of sheep. These are shut up in the house every night, the floor of which is from time to time thickly covered with a bed of turf or sand, so as to form a kind of compost dung-hill, equal in surface to the area of the house, and from two to about four feet in depth. Besides this, the dung afforded by the black cattle and horses is also formed into a compost dung-hill, of which about three-fourths is generally *pure sand*, the least earthy and of largest particles being universally preferred. Of these two there must be amassed in the course of the year such a quantity as is sufficient to spread over one fourth of the farm, which, after three ploughings, is generally sown with Scots bear, at the rate of four firlots to the acre, between the middle of May and the middle of June. And this, with the exception of a portion allowed for potatoes, and occasionally a small patch in flax, for domestic accommodation, is uniformly succeeded by two or three successive crops of oats; the oats sown between the first week of March and the last week of April, and after one ploughing, which is performed during the winter, or at the time of sowing, and four firlots of seed is allowed to the acre; and if the land, under this management, becomes so much over-run with weeds of different kinds as not to return double the seed, which is not unfrequently the case, it is allowed to lye waste for one or two years, during which it is pastured by the cows and horses, and again brought under cultivation, and treated in the same manner as above described.

On the large farms, and on such lands as are occupied by the proprietors, and where fallow green crops and sown grass are introduced into the system, the most improved and judicious mode of managing the dung, and laying down the different crops, prevail.

The system adopted by the generality of farmers, as above described, is the necessary result of their having no certain leases; and although, before the depreciation of the value of money

money by its increased abundance in the present age, this system might have afforded the comforts of life suited to the ideas of the times, yet it is a system which at the present day uniformly condemns its followers to all the evils of poverty, and consequently prevents them from possessing the means or the inclination for improvement.

This becomes conspicuous by the mere inspection only of their extremely imperfect implements of agriculture, which, with very few exceptions, are fabricated by the tenants themselves. It is unnecessary to describe the clumsy aukwardness of the plough, in the construction of which there is comparatively very little iron employed. The carts are framed on a form still further from perfection: the wheels, about two feet diameter, are composed only of three pieces of plank two or three inches thick, having square holes in the centre to receive the axle, which must therefore turn round with the wheels, moving in wooden bows fixed under the body of the cart. The shafts are formed of the larger, and the body of the carriage of bars or slender batons of the smaller branches of the alder tree. It not being intended to recommend this model for imitation, it is needless to describe the straw collar, the saddle, or the timber crupper, or to calculate the inferiority of the power of the horses in such contemptible harness, or the difference between the load which is drawn and that which might be drawn by the same horses in a cart and harness of more perfect construction.

It is only further necessary to mention the kellach sledge, a conical basket framed of twigs, supported with its base uppermost between the shafts and two cross bars, by which the shafts are connected, which is still commonly used, and which is sometimes drawn without wheels of any kind.

On the farms of the proprietors, and on the large farms, ploughs, carts, harrows, and every other implement employed in the field, are constructed on the best principles, and in the most perfect manner.

LABOURERS, AND THE EXPENCE OF LABOUR.

Though there are no manufactures in this district, besides those already mentioned, yet the price of labour has nearly doubled in the course of the last twenty years: this perhaps may be accounted for by the great number of both sexes in that class going to the south of Scotland, in order to procure work in summer and harvest, from whence they return with such a stock of money in their pockets, as enables them to spend the winter with some degree of comfort.

The wages of an ordinary ploughman, exclusive of bed and board, are from 5l. to 6l. sterling a year, and those of a female servant from 1l. 15s. to 2l. 5s.; labourers by the day have seven-pence or eight-pence and their victuals.

A man engaged for the harvest, which generally lasts six weeks, receives 1l. and a woman from 14s. to 17s.

The farm servants, with few exceptions, lodge and eat in the family; they are maintained nearly in the same manner, though at a much less expence, than those in the county of Moray, as was more fully described in the report of that district. Potatoes, and the small herrings which are caught in great quantities in the Frith, supply a great proportion of the food of the poorer people, servants and labourers.

ROADS AND BRIDGES.

In the report of the county of Moray, the convenience, practicability and expence of erecting a bridge across the river Findhorn, was pretty fully detailed; it is only further necessary here to add, that if this interesting improvement were by any means obtained, the course of the post-road through this district could be conducted in a line much more advantageous to the inhabitants and to the public at large; and it is humbly suggested, that the best possible direction, both in regard to a

proper level, and to every other object which ought to be attended to in a work of this kind, would be to carry this road from the proposed bridge to be built across the Findhorn, by the north side of the Earl of MORAY's plantations at Darnway, along the south side of the moss of Litie, through the lands of Auldearn, and from thence to the bridge over the water of Nairn, on the military road to Fort George; from thence through the inclosures of Kilravock, holding westward to the church of Croy, until it meet the present highway about a mile farther west.

There are several advantages which would be gained by this direction of the road: the rivulet called the burn of Dalvey, could never impede the traveller so near its source as Earl's Mill, where at any rate a bridge could be afforded from the public funds of the county.

But what would be of much more advantage to the inhabitants of the country, is, that this direction of the post road would open up an immediate and direct communication through the most valuable tract of arable land in the district: the advantages of this need not be pointed out, even to any farmer of ordinary observation, or of common understanding; yet from these obvious advantages this part of the country is entirely debarred by the present course of the post road, which is directed on the outside of the country; and excepting part of the parish of Dyke, and the town of Nairn, it is conducted along the most sterile and the most thinly inhabited tract in the low part of the district.

The direction of the road here pointed out, would open to all the country an easy and ready access to an almost inexhaustible fund of rich pure marl, which has been hitherto locked up in the moss of Litie; and another quarter of the country would be hereby also equally enriched, by a similar access to the marl pits lately opened at Kinstarie.

The military road from Strathspey to Fort George, by Dalsy bridge, has been lately completed in the most masterly

manner, insomuch that it is not easy to form an idea that there is any thing further required for its improvement; and much credit is certainly due to those under whose directions this work was planned and executed.

The other roads were made and repaired under the authority of the Act of Parliament 1669: of them it is only necessary to observe, that they merit no commendation, and that they remain susceptible of great improvements, which might certainly be effected even under this Act of Parliament, if proper attention was paid by those who are charged with the execution of this branch of police.

The landholders in Inverness-shire have lately applied for and obtained an Act of Parliament, for levying conversion money in lieu of labour, and for making and repairing highways and bridges in that shire, by which means it is to be hoped both the public and parochial roads will in a few years be put in a proper state of repair.

MARKETS AND FAIRS.

In the towns of Inverness and Nairn there are regular weekly markets, where butcher meat, meal, butter, cheese, poultry, eggs, and such articles, are sold, and where also considerable quantities of fuel is brought for sale by the poorer tenants in the neighbourhood; and from the sale of such articles these tenants are on the other hand supplied with salt, and such other articles as they consider necessary; and by this means also, a part of their money rent is scraped together.

Butcher meat and fish, though still moderate compared to the prices in other parts of the kingdom, have, notwithstanding, of late years advanced very considerably in this district.

Butcher meat sells at from 2d. to 3d. the pound, haddocks from 6d. to 1s. the dozen, poultry 6d. each, ducks 7d. or 8d. geese from 1s. 6d. to 2s. and turkeys 3s. each; eggs about 2d. the dozen.

The

The average price of grain and oatmeal for the last seven years, will be seen by the annexed fiars of the county of Inverness and Nairn.

FIARS OF INVERNESS-SHIRE FOR THE CROPS 1786 AND 1792, AND THE INTERMEDIATE CROPS AND YEARS.

Years.	Wheat.			Bear.			Peas.			Oats & Oatmeal								
	£.	s.	d.	£.	s.	d.	£.	s.	d.	£.	s.	d.						
1786	1	0	0	0	17	0	0	15	0	0	15	0						
1787	1	0	0	0	17	0	0	15	0	0	15	0						
1788	1	0	0	0	15	0	0	13	4	0	13	4						
1789	1	0	0	0	19	0	0	13	0	0	13	0						
1790	1	1	0	0	17	0	0	15	0	0	15	0						
1791	0	19	0	0	18	0	0	16	6	0	16	6						
1792	1	0	0	0	18	0	0	15	0	0	15	0						

FIARS OF NAIRN-SHIRE FOR THE CROPS 1786 AND 1792, AND THE INTERMEDIATE CROPS AND YEARS.

Years.	Wheat.			Barley.			Oats.			Oatmeal.			Peas.			Beans.			Rye.		
	£.	s.	d.	£.	s.	d.	£.	s.	d.	£.	s.	d.	£.	s.	d.	£.	s.	d.	£.	s.	d.
1786	1	0	0	0	17	0	0	15	0	0	15	0	0	15	0	0	15	0	0	15	0
1787	1	0	0	0	17	0	0	16	0	0	15	0	0	15	0	0	15	0	0	15	0
1788	1	4	0	0	14	6	0	13	6	0	13	0	0	13	0	0	13	0	0	13	0
1789	0	0	0	0	15	0	0	13	0	0	13	0	0	13	0	0	13	0	0	13	0
1790	0	0	0	0	16	0	0	15	6	0	15	0	0	15	0	0	15	0	0	15	0
1791	0	0	0	0	18	0	0	18	0	0	16	0	0	16	0	0	16	0	0	12	0
1792	0	0	0	0	17	0	0	14	0	0	14	0	0	14	0	0	14	0	0	14	0

In Inverness there are seven fairs during the course of the year, in which black cattle, horses, sheep, implements of husbandry, and country commodities, are sold. At these fairs the country people from the remotest parts of the North and West Highlands are in the practice of providing themselves with those articles which they must necessarily have; and which is generally done by the barter of their butter, cheese, peltry, and such other merchandize as their situation enables them to bring to market.

In the town of Nairn there are also six stated fairs in the year, in which business similar to that of Inverness fairs is negotiated to a certain extent. But as Inverness lyes on the one side, and Forres on the other, and both better situated for a trade of this kind, the stated fairs which are held in the town of Nairn are comparatively of little consequence, as the inhabitants of a small corner of the country only attend them.

FARM HOUSES AND OFFICES.

The few farmers who possess what are here considered as extensive farms, are well accommodated with houses. They are built in a substantial manner, of stone and lime, and either slated, or thatched with straw; they appear sufficiently commodious and properly situated; but it must be observed, that they are in general built at the tenant's expence. He is obliged to lay out the money in the first instance, and the proprietor is only bound by the lease to allow him a certain proportion of the expence at his removal. If the value of the houses should exceed the sum stipulated in the lease, by the custom of the country, it is left optional to the tenant either to carry off the surplus value, or to bargain with his successor on such terms as they may agree upon, or as two men to be mutually chosen by them, may determine.

The habitations of the poorer tenants in the district, however, are mean, dark and dirty cottages built of turf, without

order or connexion with each other. The proprietor in general affords what is called the great timber, and the tenant is at the expence of cutting the turf and erecting the fabric. The district is by no means destitute of stone, and therefore, by a little expence and attention on the part of the proprietors, and of those who have the management of their estates, this class of people might be accommodated with lodgings much warmer and more healthy than those in which they are at present obliged to reside.

In the villages above-mentioned, the houses are in general built of stone, and slated, or properly thatched either with straw, or with bent from the downs along the shore.

LIVE STOCK.

It will be naturally inferred from the preceding account of the state of the country, and from the system of husbandry generally practised, that there is but little attention paid to the improvement of stock, and that they must be comparatively of little value.

Black Cattle.---Agreeable to the ancient practice, which was taken notice of in the agricultural report of Moray, oxen are still for the most part employed in the plough on the ordinary sized farms; and when the seed season is over, towards the end of June, they are generally boarded for about three months, at the rate of from 1s. 3d. to 1s. 6d. each, in the glens and mountains in the Highlands. Their pile, by this management, is no doubt much improved, but the labour requisite to procure their food, and the cold to which they are exposed, is not very favourable to the other qualifications which are regarded in the species; yet the breed remains unmixed, neither crossed with the Lancashire or Dutch, and exhibit when in flesh, a more handsome figure than the herds of the county of Moray. They are, however, of a smaller

bone, weighing when fat only from 18 to 24 stone, Amsterdam. The number in this district amounts to upwards of 11,000, and when three years old, the general value may be estimated at from 2l. 15s. to 3l. each.

Horses.—In this report it is unnecessary to take notice of the farm horses belonging to the proprietors and the more opulent farmers, because they are nearly equal in height and value to the horses in other parts of the kingdom where two horse ploughs have been introduced.

The horses which are reared by the most attentive farmers in the middling and lower classes, are generally from seven to nine hands high, and when five or six years old, they sell at from 7l. to 10l. sterling. There are, however, a number of horses in the district, which do not sell when in their prime for much above the half of these prices. The number of horses of all kinds in the district is nearly 4000, and the average price when five years old, may be from 7l. to 8l.

Sheep.—It has been observed, that a certain number of this species of stock is to be seen on all the small farms. They are almost without exception of the small white faced kind, and appear to be the original breed of the country. A score of wedders taken from the flock, without particular selection in regard to size, sell, about the end of harvest, when fattest, at from 6l. to 7l. the score, at which season such wedders weigh from six to eight pounds the quarter. The wool is for the most part manufactured in the family, for bed-clothes and apparel. When sold at Inverness or Nairn, the price is about 8s. the stone. The whole number is about 18,500, and the medium price may be about five shillings.

DRAINS.

From the preceding description of the soil of this district, it will be understood that the arable lands are in general dry.

In the country called the *Aird*, of which the parish of Kirk-hill is a part, where the soil is a deep rich clay, open drains properly constructed would be a great improvement, as appears from the good effects of those already made.

In this district there are several small lakes, some consisting of marshy, and others of mossy ground, that might be easily cleared of water, yet in general the inducement to lay out the requisite expence must be the expectation of finding marl, rather than making any addition to the corn fields. In the parish of Kirk-hill, however, a considerable acquisition of arable land might be gained at a small expence, by draining the lake, or loch of Conan. Another improvement of more consequence might be effected, and a great extent of the most valuable land in the district brought into a state of cultivation, were an embankment to be formed along the shore of the Frith, from the mouth of the river Beaulie to the estate of Warrandfield, so as to secure this extensive tract, consisting of several hundred acres, from being overflowed or injured by the Moray Frith. One gentleman, Major FRASER of Belladrum, who rents a farm here from the Hon. Mr. FRASER of Lovat, the proprietor of all these grounds along the shore, has done a great deal in order to secure his farm, and has thereby evinced the practicability of converting the whole of this plain, the greatest part of which is now in a state of nature, into rich arable corn fields. It is to be hoped the proprietor will study his own interest, and that of the country at large, by following out the plan so judiciously and so successfully begun by Major FRASER.

But an improvement of still greater consequence, and more extensively useful to the country, might be made at an expence comparatively small, were Mr. CAMPBELL of Calder to drain the moss of Litie, in which, it is already ascertained, there is an almost inexhaustible stock of rich pure marl. Those only who are acquainted with the improvements which have been effected in Strathmore, and in other parts of the

county of Angus, by the use of this valuable manure, can form any judgment of the advantages which must necessarily result to this gentleman and to the neighbouring proprietors, were this moss drained, and marl brought into general use as a manure. Except on the estate of Cantray, there are no lime quarries in the district, and the expence of importing lime from the Frith of Forth, or the north of England, amounts almost to a prohibition, at least insomuch that there is little chance of this species of manure ever coming into general use in this district. On that account therefore, the opening of this store of marl becomes an object of still greater importance. As an inducement to Mr. CAMPBELL to execute this important work, it may not be improper here to state, that a gentleman in Angus, Mr. DEMPSTER of Dunichen, whose spirited exertions to promote the good of his country are so well known as to require no commentary here, a few years ago drained a lake on his estate in which marl had been discovered, and the last year cleared upwards of 900l. sterling, after paying all expences.

There is indeed just now some thousand bolls of very good marl lying ready for market on Mr. GORDON's estate of Kinstarie; but even the most intelligent tenants in that neighbourhood seem totally ignorant of the value of this new discovered treasure, and have not yet had resolution to make one single experiment of its effects, even though sufficient proofs have been afforded them, by the greatest crops of corn, grass and turnips produced thereby on Mr. GORDON's own farm. It is however certain, that both these gentlemen, as well as the other proprietors in the neighbourhood, have it in their power, by the leases which they grant in future, of obliging their tenants to use marl as a manure, and if this is done, under proper regulations (which ought to be very carefully attended to, and which will probably be detailed in the report of the county of Angus) it is evident that it is the best security they can have for the improvement of their estates, and the punctual payment of their rents.

WOODS AND PLANTATIONS.

Although this district is by no means destitute of wood, yet its general appearance, except for two or three miles west of the river Findhorn, and about Inverness, seems bleak and naked, and as the plantations are in general situated in the higher parts of the country, it is evident they afford no shelter to the arable lands. It would certainly add much to the beauty of the country, as well as improvement in regard to climate, were the proprietors to plant the rising grounds which are intermixed with the corn fields, but inaccessible to the plough. Of such there are a great many all over the country, particularly on the estates of Culloden, Castle Stewart, and Kinstarie. The proprietors of the parish of Inverness have adopted this plan, and if they proceed for a few years, it is probable there will not be a single useless acre in that parish. It must be observed also, that every proprietor's family seat in the district is ornamented with plantations, containing every species of forest trees.

Extensive plantations, though principally of Scots fir, are to be seen on almost every estate in the higher part of the country, and on some of the moors in the low country; and Mr. DAVIDSON of Cantray has within these twenty years planted upwards of two thousand acres. The country at present not only supplies itself, but also a considerable part of the adjoining county of Elgin and Forres, with timber for the ordinary implements of husbandry, and for the buildings and furniture of the country people; and there is no doubt but in a few years the export of timber from this district will be an article of considerable value.

It would be improper in a report of this kind, not to take particular notice of the Earl of MORAY's extensive forests on his estate of Darnway, and of those also on his Lordship's estate of Castle Stewart.

These are of very great extent, covering upwards of 3600 Scots acres, all within the district under review. Of this

extent the greatest part lyes in the parish of Edenkeillie, and part in that of Dyke, stretching along the banks of the Findhorn, and forming an immense circle round the ancient Castle of Darnway. The remainder, about 600 acres, lyes in the parish of Petty, near to Castle Stewart. They were begun by the present Earl in the year 1767. The Scots fir is used for nursing up and sheltering the more valuable kinds of deciduous trees, of which the oak is the principal object of attention. These are planted among the firs at the distances at which they are intended to stand when full grown; and as soon as the firs have performed this office, they are to be altogether taken away, so that the whole will form a noble forest of oaks intermixed with the other valuable deciduous trees. In some of the older plantations the firs are already completely cut out, and exhibit forest scenes vastly superior to that of the gloomy Scots fir so frequent in Scotland. Every attention has been paid to the preservation and proper thinning of these plantations, and the natural consequence has been, that they have throve extremely, many of them, about nineteen years old, measuring about twenty inches in girth at three feet from the ground. The firs are planted out at two years old from the seed bed, and when of size sufficient to afford proper shelter, pits are made amongst them, into which the oaks and other trees are planted, often standing two years in the seed bed, and three or four years in the nursery. To shew with what spirit these plantations have been carried on, it may be proper to mention, that in one season, viz. between Autumn 1782 and Summer 1783, no fewer than 75,000 oaks were planted out. From the failure in England of the acorn crop sometimes for two or three seasons following, it is impossible to make the progress which could be wished, in filling up these extensive plantations with oaks, as all the young plants are raised in the Earl's own gardens at Darnway. An exact register being kept of all the trees annually planted out, a copy of the amount of each class has been obtained, which is here subjoined.

Oaks

Oaks planted between November 1767 and Summer 1793 - - -	614,500
Ash, beech, elm, sycamore, Spanish chesnut, spruce firs and larix, during same period	336,500
Scots firs betwixt November 1767 and Summer 1787 - - - -	9,687,000
Total	10,638,000

A period of many years will be requisite for filling up these extensive plantations with oaks, but the work is going regularly forward.

The thinnings of the firs are sold from two-pence to four-pence per dozen; but the demand of the country is not equal to the quantities necessarily taken out. A few years ago a part of them were carried by sea to Newcastle and Sunderland, for the use of the coal-works in that neighbourhood.

On the opposite banks of the Findhorn a similar mode of planting has been followed by Mr. CUMIN of Nelugas, and since 1779 above two hundred acres have been covered, and about 80,000 oaks planted out.

MISCELLANEOUS OBSERVATIONS,

AND

HINTS FOR IMPROVEMENT.

The means of improvement have been hinted at in general, or may be inferred from the state of the country as already described. It is obvious that this district is in general more backward in the state of agriculture, and in the condition of the common people, than their neighbours to the southward. It is also obvious, that the arable land, by judicious management, might be rendered greatly more productive, and that the value of the cattle, horses and sheep, might be increased many-fold.

It is however not to be supposed, that any lasting and general improvement can be on a sudden, or all at once, introduced into any country, even although the landlords were to bestow their united and best directed efforts for that purpose. It must be many years before the land, under the management of the country people, can be brought into the most improved condition of which it is susceptible. The proprietors, however, ought not to be discouraged, for it is evident that they may in a few years, by proper attention, bring about a surprizing alteration in the state of things, and in the appearance of the country. In order to effectuate this, it appears necessary to enlarge the farms to an extent sufficient for the employment of a reasonable capital, which should be applied in the cultivation of the farm only, without being directed to other purposes, such as building houses, or inclosing the farm, the expence of which should be advanced by the proprietor, on a moderate interest to be paid by the tenant.

One objection only can be stated against the propriety of enlarging the farms, and that is the removing the present set of tenants; but this certainly might be obviated, were the proprietors to feu out some detached corners of their estates properly situated in regard to fuel and water, and introduce some manufactures to give employment to the people. They would in that case live much more comfortably than they do at present, and at the same time become more useful members of the state. It may be unnecessary to repeat, that no spirited cultivation of land can be performed by the poor inhabitants of a dark damp smoaky hovel, when it is further considered that the labouring cattle are still more wretchedly accommodated.

The want of leases must be an insurmountable bar to improvements in agriculture.

In countries highly cultivated, where the inclosures are completed, and regular rotations of croping introduced, a lease of nineteen years is considered both by proprietor and tenant

as a reasonable period; but in such a country as this, where so much rests with the tenant to perform, it might be highly proper to add eight or ten years more to this duration, so that the tenant may be satisfied he can reap the fruits of his own labour, skill and improvements, without the fear of being turned out by another.

From the consideration that all people are extremely reluctant to quit old habits, and to venture on untried experiments, perhaps it might be proper that the first leases which are granted, should oblige the holders to have a certain proportion of the farm in fallow, clover, and turnip.

Were regular rotations of croping to be adopted, the following appears likely to turn out the most advantageous for that part of the district from Findhorn to Inverness.

First year---Turnip, land dunged.

Second year---Barley, with 8 lb. white and 8 lb. red clover, 4 lb. rib-grass, and one and a half or two bushels of rye-grass.

Third year---Grass to be made into hay.

Fourth year---Grass to be pastured.

Fifth year---Grass to be pastured.

Sixth year---Grass to be pastured.

Seventh year---Oats.

Eighth year---Barley.

In the low part of the parish of Kirk-hill, where the soil and climate are nearly equal to that of the Carse of Gowrie, the same rotation of croping which after many years experience is now considered the most advantageous there, might be introduced into this part of the district with great propriety, and is as follows:

First year---Fallow, the land dunged.

Second year---Wheat.

Third year---Pease or beans.

Fourth year---Barley, with 20 lb. red clover, and one bushel rye-grass.

Fifth year---Grass.

Sixth year---Oats.

But no regular rotation of croping can be adopted in any country, unless the fields are laid out in proper order; and where pasture grass makes part of the system, it is absolutely necessary that the farm should be inclosed, and subdivided. In this country in general, that can only be done by thorn hedges, as stone fences could only be erected on particular estates where quarries abound. From every information that could be procured, there is reason to believe, that were the proprietors to grant leases for twenty one or twenty seven years, many of the tenants would chearfully concur with them in bearing a proportion of the expence of rearing and protecting hedges, and also agree to pay interest for the money expended in making these inclosures.

Besides the other advantages of inclosing, which are so well known that they need not be here pointed out, it is certain that the breed of stock would be thereby greatly improved. It has been long supposed, that the cattle raised on the inclosed farms in the occupation of the proprietors, are of a superior breed to those raised by the tenants in the adjoining open fields, because they are so greatly superior in weight and figure; but all this superiority is nothing more than the result of the ease, shelter, freedom, and more plentiful food with which they are supplied in these inclosures; accordingly it is found, that the small cattle raised by the poorest people in the district, when pastured but a few years in the meadows of England, attain near double their former size.

It is needless to resume the reflections on the mill restrictions, services and customs, or on the carriages and other labour exacted by the landlords. The experience of the whole landlords in the highest improved counties of Scotland, have demonstrated how much the annual returns of an estate are increased by abolishing every species of personal thraldom.

Although the sands of Cowbin, from the familiarity of the scene, may be disregarded by those in that vicinity, yet to every attentive strnager it exhibits a most singular landscape,

and while it recalls his idea of the past, it also excites apprehensions respecting its future encroachments. The Act of Parliament for the preservation of bent has proved an ineffectual check, as it is now currently pulled, and sold for thatching the houses in the country, and that with the tacit approbation at least of those proprietors whose interests are most deeply concerned. Planting broad belts of the quickest growing trees on the nearest uncovered ground, appears to be the most certain barrier that can be obtained, and this ground being in general deep and moist, would be favourable to the growth of such trees.

From the preceding report it will appear, that except the lands occupied by the proprietors, and by some few intelligent and respectable farmers, no improvements have taken place in the cultivation of the arable lands, yet still it is perfectly evident that the country is very capable of the highest cultivation; and though it is not probable, as has been already observed, that any general improvement can be established all at once, yet it is certain that the proprietors, and those in the management of their estates, have it much in their power gradually to introduce better modes of husbandry, which, it is humbly supposed, can best be effected by enlarging the size of the farms, granting leases of proper duration, adopting regular rotations of croping, inclosing the lands, and building proper farm houses, without obliging the tenant to expend any part of his stock in procuring the necessary accommodation in these respects.

There are two gentlemen, Mr. FORBES of Culloden, and Mr. GORDON of Kinstarie, who are about to grant leases over their estates in this district. From their public spirit it is to be expected that they will not miss so favourable an opportunity of introducing a regular system of husbandry on their estates, which would not only secure the complete improvement of them, but also promote the general interests of the country, for unless some public spirited proprietors will

make such arrangements on their estates, and use some such measures as are here pointed out, the country must long remain in its present unimproved state; and it cannot be supposed that the present set of tenants, considering the circumstances under which they are placed, will ever adopt any spirited plan for the improvement of the country or of their own situation.

FORT GEORGE.

This Fort is situated on the point of Airderseer, near the middle of the northern boundary of this district. Government once proposed to build it at Inverness, at a place called the *Citadel*, or *Cromwell's Fort*; but the magistrates of Inverness demanded such a price for the ground, that the Duke of CUMBERLAND was offended, and ordered an inspection of the ground whereon it now stands to be made by some engineers, who reported that it would answer equally well with that at Inverness. Accordingly Government purchased the ground, and a large farm in the neighbourhood of it, from Mr. CAMPBELL of Calder. The works commenced in the year 1747, under the direction of General SKINNER. The estimate given in was 120,000l. but it is said to have cost upwards of 160,000l. It is a most regular fortification, and is the only one built in Britain according to a regular plan. It covers ten Scots acres. It does not appear to have had any considerable influence on the state of society in the country around; the market, however, which it has opened for several productions of the country, renders it an object of some consideration in an agricultural view. It might therefore be improper to conclude this report without taking some notice of this superb and expensive establishment.

THE END.

GENERAL VIEW

OF THE

AGRICULTURE

OF THE COUNTY OF

BANFF,

WITH

OBSERVATIONS ON THE MEANS OF ITS IMPROVEMENT,

BY

JAMES DONALDSON,

FOR THE HONOURABLE WILLIAM RAMSAY MAULE OF PANMURE.

Gt. Brit

THE CONSIDERATION OF THE BOARD OF AGRICULTURE AND INTERNAL IMPROVEMENT.

EDINBURGH:

PRINTED BY THOMAS RUDDIMAN.

M.DCC,XCIV.

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TO THE READER.

IT is requeſted that this Paper may be returned to t
Board of Agriculture, at its office in London, with any ad
tional remarks and obſervations which may occur on t
peruſal, *written on the margin*, as ſoon as may be convenien

It is hardly neceſſary to add, that this Report is, at preſe
printed and circulated for the purpoſe merely of procuri
farther information reſpecting the Huſbandry of this Diſtri
and to enable every one to contribute his mite to the Impro
ment of the Country.

The Board has adopted the ſame plan in regard to all t
other Counties in the United Kingdom; and will be happy
give every aſſiſtance in its power, to any perſon who may
deſirous of improving his Breed of Cattle, Sheep, &c. or
trying any uſeful experiment in Huſbandry.

London,
June 1794.

INTRODUCTION.

IN Reports of this nature, it is in many cases impoſſible to adhere with propriety to the ancient limits of the counties to be described. These, it evidently appears, have, in general, been fixed by the political or eccleſiaſtical influence of the times, and for the moſt part, without regard either to local ſituation, or to the convenience and accommodation of the inhabitants. In no other inſtance will this obſervation apply with more force than in the preſent, as several detached parts of the county of Banff are to be found in the very center of Aberdeenſhire. That being the case, it has been judged more diſtinct to confine this report to the country lying between the rivers Spey and Doveran; including that part of the county of Elgin and Forres on the south ſide of Spey, and which was purposely omitted in the report of that county, and also the pariſhes of Cairney and Glass, which, though locally ſituated in the county of Banff, belong politically to the county of Aberdeen.

GENERAL DESCRIPTION.

THE diſtrict to be conſidered in this report, is ſituated within the 58° of N. Latitude, and extends from Banff to Garmouth, along the south ſhore of the Moray frith, its northern boundary, about 24 Engliſh miles. The length from the bay of Cullen, in a south-weſt direction to Loch Avon, its southern boundary, is 50 miles. It preserves a mean length of nearly 20 miles, till within five miles of that lake, where it is suddenly compreſſed

into a breadth of little more than three miles, making a superficies of 1015 square miles, that is, 649,600 Engliſh acres, or 516,635 Scots acres.

The whole, except the tract along the ſea-ſhore, may be very properly described as a hilly, mountainous country, interspersed with a great many fertile valleys, well adapted to the cultivation of corn and grass.

The hills are either covered with heath or moss, affording little paſture; while from their bleak and barren aspect, they have a very gloomy and unpleasant appearance.

The arable land, which bears but a small proportion to the waſte, lies on the ſides, and towards the bottoms of the higher hills, or on the ſides of those valleys through which the waters have their courses, or on the narrow level plains on the banks of these waters.

In several of these valleys where cultivation has hitherto been found impracticable, there is abundance of fine healthy paſture, on which young cattle are reared to great advantage, the grounds being in general well ſheltered by natural woods of oak, birch, alder, &c.

Rivers and Waters. The course of the river Spey, which forms the weſtern boundary of this diſtrict, was fully described in the report of the county of Elgin and Forres.

The water of Avon has its source from the lake of that name, on the borders of the ſhires of Aberdeen and Inverneſs; and being joined in its progress by the water of Livat, falls into the Spey at Ballandallach, after a course of upwards of twenty miles.

The water of Fiddich has its riſe in the hills of Glenfiddich and Strathdon, and after a course of ſome miles, is joined by the water of Dullan, and both fall into the Spey about two miles above Arntullie.

The river Doveran, which takes its rise in Aberdeenſhire, receives the waters of Calrach and Blackwater, which iſſue from the hills on the south and eaſt ſides of the diſtrict. The lands on their banks being better ſheltered, and consequently more fertile, is the only circumſtance relating to these waters which merits conſideration here. The Doveran is not navigable, nor does it contribute to the formation of the harbour of Banff, nor to the port of Macduff on the southern banks, yet it is notwithſtanding of importance on account of the value of its salmon fiſhings.

There are many other ſmall rivulets, which fall into the frith at different places along the coaſt. These serve to turn the machinery of the corn mills erected upon them, and alſo the machinery neceſſary for carrying on different branches of manufactures eſtabliſhed in that part of the country, particularly at Banff, Boyndie, Portsoy, and Cullen.

Soil.—Taking a general view of the whole diſtrict, the soil may be described as of three qualities. That of the plains on the banks of the waters, where it has not been mixed with sand by the waſhings of the ſtreams, is a ſtiff deep clay; on the ſides of the valleys it is a deep black loam on a bed of rock, generally limeſtone; and on the ſides of the hills, and in the higher parts of the country, where cultivation has taken place, the soil is either the same as laſt described, or a mixture of moss and gravel on a red tilly bottom; and is, as may be supposed, very retentive of water.

Climate.—From the nature of the soil, as above described, as well as from its generally exposed ſituation, and the great height of many of the mountains, this diſtrict is often subjected to all the evils of a cold and rainy climate. The harveſts are often interrupted and precarious,

rious, and if not compleated before the end of October, the crops in the interior and more remote parts of the country, are for the moſt part damaged by rains, which about that season often set in for weeks together, are frequently succeeded (without any interval of good weather) by froſts and deep falls of snow, and often suspend the operations of husbandry for many of the winter months. In the years 1782 and 1787, the harveſt continued for near three months. From this account, however, the lower part of the country from Duff-houſe to Forglen and Kinnairdy, a tract of about twelve miles along the river ſide, and from Banff to Gordon Caſtle, including the diſtricts of Boyne and Enzie, muſt be excepted, being nearly equal to the climate of Moray, and greatly surpaſſing the moſt part of that county in the fertility of its soil, the improvements of its agriculture, and the richness of its productions.

Oats, *Peaſe* and *Beans* are sown from the beginning of March, to the middle of April. *Barley* seed commences about the beginning of May, and the sowing of *Wheat* in October, though sometimes so late as November. The harveſt generally commences in the course of the firſt ten days of September, and in ordinary seasons is compleated in ſix or seven weeks, during which period the corns are all built and ſtacked in the yard.

Towns, Population and Manufactures.—In this diſtrict there are two Royal Burghs, viz. Banff and Cullen, ſituated on the coaſt, and at the diſtance of twelve miles from each other. Banff contains upwards of 3500 souls, but Cullen, in regard to population and wealth, is equalled by several of the villages in the county, of which Portſoy, Keith and Fochabers are the moſt conſiderable; though there are a great many other villages, both in the

the interior parts of the country and along the sea-coaſt, which may contain from 100 to 500 inhabitants in each, so that the population of the diſtrict is very conſiderable, and may be accounted at 38,000 souls. The greateſt proportion of them are no doubt engaged in agriculture, though a very conſiderable number is employed in commerce, manufactures, and the fiſheries on the coaſt.

Several of the villages in this county being situated upon the ſhore of the Moray frith, are principally inhabited by fiſhermen, who follow no other occupation. They fiſh for cod, ling, skate, macarel, whiting, and haddock, of which last species an immense quantity was caught along this coast during the winter 1792-3, though they have been remarkably scarce for several years on the South-east coast of Scotland; and besides supplying the county of Banff, a great quantity of dried fiſh is sent over land to the counties of Elgin and Aberdeen, and the remainder, amounting to several thousand dozens of salted cod, ling, skate and haddock, is annually exported by the fiſhermen themselves to Montrose, Arbroath, Dundee, Perth, and the towns along the sides of the Frith of Forth, to the value of upwards of L. 3000 Sterling yearly; a considerable proportion of which sum they expend in the purchase of coal, salt, and such other articles as they judge they can purchase cheaper than they could do at home; with the remainder they purchase cloaths, meat and the other neceſsaries they stand in need of; and from this fund also the rent is paid to the proprietor of the villages in which they reside. The general terms of agreement between a proprietor of one of these villages, and a boat's crew, are as follows: The fiſhing boat complete, which generally costs L. 22. is furniſhed by the proprietor;

proprietor; the crew, which consists of six men, become jointly bound to employ the boat for seven years in the white fiſhing on the coast, and to pay a rent of five guineas yearly for the boat, and a small piece of ground for building their houses (which they do at their own expence), and for gardens. They are obliged to uphold the boat during the seven years, at the end of which period, the proprietor furniſhes the hull of a new boat, which generally costs about L. 11. But in the event of a boat not lasting seven years, the proprietor furniſhes a new one at his own expence, and the crew agree to pay a yearly advance of rent above the five guineas, in proportion to the period which was to run of the seven years, when the former boat became unſerviceable.

In case of the death of any of the boatmen, some person agreeable to the proprietor, and to the other fiſhermen, gets poſſeſsion of the house and garden of the deceased, with his ſhare of the profits of the concern. But he is obliged to pay the widow, or relations of his predeceſsor, a certain consideration for the house, and any improvements that may have been made on the garden.

It appears from the Custom-house books of Aberdeen and Inverneſs, that in the courſe of seven years preceding January 1794, there were exported from this county 429,571 dried cod and ling, 366 barrels of salted cod, 15,800 dried skate, and 148,700 dried haddocks, all which are disposed of on the south-east coast of Scotland, as before mentioned. The export of salmon in the same period, from that part of this coast under the jurisdiction of the Custom-house of Aberdeen, but in which the fiſhings on the Spey are not included, have been 2,630 barrels salted, and 20,905 kits of freſh salmon. The first is generally ſent up the Mediterranean, and the last find a ready ſale at the London market.

Manufactures

Manufactures were firſt introduced into this diſtrict by the same patriotic Nobleman who led the way to improvements in agriculture. At the beginning, their progreſs was ſlow, and of little value; but of late years they have become of considerable importance.

In the course of the laſt ſeven years, it appears, that beſides a very great quantity of linen yarn and coarse linen cloth, which is exported over-land from the country, generally to Aberdeen, Glasgow and Paiſley, there has in that period been ſhipped from Banff, Portsoy, and Macduff *, a sea port in this county, though ſituated on the south ſide of Doveran, 710,000 spindles of linen yarn, 507,108 pounds weight of white and coloured threads,

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* Formerly called Dowen, a contraction of Doveran, probably from the river of that name emptying itself into the sea at a place called *the Craig*, close to this town, which it is aſſerted was the case about 300 years ago. Macduff was a village inhabited only by fiſhers, containing about 300 souls, and about the year 1761 the whole rent amounted only to L. 55 : 11 : 1½. It is well ſituated for a harbour, the preſent Noble Proprietor (the Earl of Fife) having lately expended nearly L. 5000 to compleat it.

His Lordſhip has granted a conſiderable number of feus, each containing 32 falls, for which 16s. 8d. of feu-duty is payable yearly. By this means a great many manufacturers and others have been induced to build subſtantial commodious houses, and the adjoining lands are let to the inhabitants at from 20 to 30s. per acre, by which means the rent is now advanced to L. 500 ſterling, and the number of inhabitants are upwards of 1300; and from every appearance there is reason to believe that this town will increase rapidly in population and prosperity, which ought to induce other proprietors to follow an example so well calculated to promote public and private intereſt.

threads, 8,755 dozen pairs of thread and worſted ſtockings, and 725 dozen pairs of leather ſhoes. The linen yarn and thread is made partly of flax imported from Holland, and partly of flax the growth of the diſtrict.

There was no poſſibility of aſcertaining the quantity of each kind manufactured: But when it is conſidered that in the neighbourhood of Keith alone there are four mills erected for ſcutching flax, and that at each of theſe from 1000 to 1500 ſtones are annually dreſſed, there can be no doubt but a very conſiderable quantity of flax is annually cultivated in this diſtrict, beyond what is neceſſary for the use of the inhabitants.

It does not appear that any linen cloth is exported from this diſtrict by ſea: But it is certain that at the Stamp Office in the town of Keith only, within the laſt ſeven years, there have been 154,649 yards of cloth ſtamped for ſale.

The diſtance from the ſea ports, and the wretched ſtate of the roads, may account for this ſpecies of manufacture being carried to Aberdeen and the other markets over land.

There are ſeveral bleachfields in this diſtrict. One in the neighbourhood of Cullen has been long eſtabliſhed, and at which about 1500 pieces of linen and 1700 ſpindles of yarn are whitened yearly.

The ſtockings and ſhoes are exported to foreign markets; the white and coloured threads are diſpoſed of in London; and the linen yarn is ſent to Aberdeen, and other places on the eaſt coaſt of Scotland.

Extent

Extent of Eſtates, Land Rents, and Tenor of Leases.— In this diſtrict there are three proprietors, each of whoſe eſtates here amount to from L. 7000 to L. 12000. There are eight others who poſſess from L. 600 to L. 1000; and the remainder is ſhared in ſmall eſtates from L. 300 to L. 400 of yearly rent; amounting in all, including L. 1200 for the salmon fiſhings on Doveran, to L. 43,500.

Though the family seats of the great proprietors are ſituated in this diſtrict, yet from neceſſary attendance to their duty in Parliament, and from other avocations, there are none of them who reſide here above a few months in the year.

Beſides the parks and pleasure grounds around the manſion houses, they each retain a certain extent of arable farm, which is managed on the moſt approved principles. Many of the other proprietors also are employed in the Army or Navy, or in ſome department of the Law, so that there are but few who reſide in the diſtrict, or who have time or opportunity for paying that degree of attention to the growing improvements of their own eſtates, or of the country at large, which the importance of the object so juſtly merits; while that proper connection which ought to subſiſt between landlords and tenants, and which uniformly takes place in all countries where improvements in agriculture have been successfully carried on, is here attended to only by a few individuals, who, by a proper attention to their own intereſts, have learned that such a conduct alone can ſecure the introduction of a general spirit of improvement among all claſſes of tenants in any country.

The rent of the arable lands in this diſtrict may be accounted at 12 s. the acre, excluſive of natural paſture, and excluſive also of the lands adjoining to the several

towns and villages, which from local ſituation and other advantages give from L. 2 to L. 4 the acre. The rents are paid partly in money, and partly in barley and oat meal: The money rent is always paid at the term of Martinmas, after reaping the crop, and the barley and oat-meal between Chriſtmas and Candlemas thereafter. The ordinary term of entry to a farm is at Whitsunday, as to the houses, garden and meadow graſs; and to the arable land at the ſeparation of that year's crop from the ground. The leaſes in general endure for nineteen years, though there are ſeveral farms on the Earl of Findlater's eſtate between Banff and Cullen, of which leaſes were granted (about the year 1759) for two nineteen years, and the lifetime of the tenant in caſe he ſhould ſurvive that period. The farm-houſes and offices are valued to the tenant on his entry, and he is bound to uphold them, ſo as to be of equal value at his removal, or he muſt pay the deficiency in money to the next incoming tenant. A liberty is reſerved by the proprietor to work all mines and minerals, and to cut drains through the farm, for the purpoſe of draining any other farm on the eſtate; the tenant being entitled to recover any damage that may be done to the ſurface, as the ſame may be aſcertained by perſons to be mutually choſen. Proprietors alſo reſerve liberty of planting any moor or paſture grounds within the limits of the farm, which they may incline to plant, at any period during the leaſe, and without making any diſcount of rent to the tenant for the lands ſo taken off.

The only clauſe contained in the leaſe in regard to the management of the land, is, that the tenant ſhall not waſte it by improper cropping.

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The tenants are in general bound to pay cess, taxes, ſchoolmaſter's ſalary, and all public burdens impoſed or to be impoſed, and further to be amenable to the deciſions of the Baron Bailies in all queſtions relating to the preſervation of growing timber, cutting meadow ground, winter herding, mill exactions, and ſuch other matters as naturally fall under the cognisance of this Court.

Aſtrictions to mills is here, with a few exceptions, in full force, and the tenants are bound by their leases to grind their corns at particular mills, where in general from the eighth to the fifteenth part of the corns ſo grinded is exacted, but on an average about the twelfth, although every farmer is obliged to be at the expence of erecting a kiln on his farm, of drying his corns, and of ſending his ſervants to the mill to aſſiſt in manufacturing them into meal. He is further bound to perform his proportion of labour, along with the other tenants, in ſupporting the fabric of the mill, and keeping the drains and water courſes in order.

On the Earl of Fife's eſtates in this diſtrict, the moſt extenſive exactions of multures were preſtable by the uſage of ancient times. At ſeveral of the mills on his property, the eighth or ninth part of all the grindable corns were exacted. This his Lordſhip has aboliſhed, and receives two ſhillings and three-pence in the pound of rent payable by each tenant aſtricted to theſe mills; and has adopted the ſame plan at his other mills, in proportion to the extent of thirlage paid, thereby keeping up the old mill rent, and baniſhing a practice of feudal ſeverity which occaſioned yearly animoſities and conſtant law-ſuits.

His Lordſhip also, much to his credit, has aboliſhed all customs and services payable by his tenants, and converted the same on very moderate terms.

Extent, and Mode of managing the Farms.

Though there are many farms in this diſtrict which contain from 100 to 200 acres of arable land, yet the general extent of them may be rated at from 40 to 60 arable acres. The remainder is either occupied by tenants who possess from five to fifteen or twenty acres, or in small lots by the inhabitants of the different towns and villages.

It does not appear that previous to the year 1748, any improvements in agriculture were introduced into this district. In those days the mode of management was the same here, as was then universally practised all over the North of Scotland. The arable lands on every farm, were divided into what was called outfield and infield. To the infield, which consisted of that part of the farm nearest to the farm houses, the whole manure was regularly applied. The only crops cultivated on the infield land were *oats*, *bear* and *pease*, and the lands were kept under tillage as long as they would produce two or three returns of the seed sown; and when a field became so reduced and so full of weeds, as not to yield this return, it was allowed to lie in natural paſture for a year or two, after which, it was again brought under cultivation, and treated in the manner before mentioned. The outfield lands were waſted by a succeſſion of oats after oats, as long as the crops would pay for seed and labour, and afford a small allowance of oatmeal for the family. They were then allowed to remain in a ſtate of absolute ſterility, producing only thiſtles and other weeds,

weeds, till after having been reſted in this ſtate for some years, the farmer thought proper to bring them again under cultivation, when, from the mode of management before described, a few scanty crops were obtained.

Oxen ploughs only were used, and when the barley seed was finiſhed, the cattle were either sold to dealers, or sent to the glens or valleys in the remote parts of the diſtrict, where they were grazed for three or four months in summer at the low rate of 1 s. or 1 s. 6d. each, and during this period the plough was laid aſide, and the farmer's servants and horses were employed in providing the neceſſary ſtock of fuel, and in collecting moss or clay, to be mixed with the dung produced by the cattle during the preceding winter. The horses were either *tethered* on the beſt of the infield paſture, or truſted to the management of a herd; and as it may eaſily be supposed, these animals often went beyond the bounds of the pasture allotted to them, and committed depredations on the adjoining corn fields.

About the period above mentioned, the late Earl of Finlater, then Lord Deſkford, to whose unremitting exertions are to be ascribed the introduction of improvements in agriculture, as well as manufactures, in this country, came to reside in the neighbourhood of Banff, and having taken one of his farms into his own poſſeſſion, set about cultivating it on the most approved manner then known in England, and for that purpose engaged an experienced overseer from that kingdom, to take the charge of it, and in a few years improved that farm in a ſtile and manner unknown in that part of the country. But his Lordſhip was sensible, however succeſsful he might be in the cultivation of his own particular farm, it was not probable that this ſucceſs would operate so powerfully

powerfully on the minds of his tenants, as to induce them, without some substantial reasons, to venture on untried experiments, or to leave the beaten tract, in which they and their fathers had trode for ages. He therefore formed, and executed a plan, which did great credit to his judgment, and which in its conſequences has been highly beneficial, as it tended to awaken that ſpirit for improvement which has now become general over the district, at least among the proprietors and more respectable farmers. His Lordſhip ſelected ſome of the moſt intelligent, active and ſubſtantial tenants in the country, to whom he granted leases on reaſonable terms, for two nineteen years and a lifetime, of farms formerly occupied by three or four tenants. By these leases, the tenants became bound to inclose and ſubdivide a certain portion of the farm with ſtone fences, or ditch and hedge, during the firſt nineteen years of the leaſe, and in the course of the ſecond nineteen years, to inclose the remainder. This the tenants became bound to do, under a certain penalty, which was mentioned in the leases. The tenants were also bound to ſummer fallow, and ſow graſs ſeeds on a certain number of acres within the firſt five years of the lease.

His Lordſhip also firſt introduced the turnip huſbandry, and by his precept and example, was the means of bringing the cultivation of this crop, by degrees, into general practice.

It is not to be expected that any general improvement in the modes of agriculture, can be introduced all at once, or that the inhabitants of a country will, on a ſudden, give up their old habits and ways of thinking. They must be induced to do ſo, either from the advantage which they are ſatisfied they will derive in conſequence

of making new arrangements with the proprietors, or from a conviction in their own minds, that the experiments which their more adventurous neighbours have attempted, have proved succesful and advantageous, and therefore, notwithstanding Lord Finlater's unwearied exertions, it was many years before fallow and sowing grafs seeds, turnip, and other green crops, came into general practice, even in that corner of his estate where he himself resided; but the tenants being at last satisfied that the improvements introduced by his Lordfhip were such, as, if adopted by them, would promote their interest, they set about making experiments, which having in every instance exceeded expectation, the spirit of improvement began of course to gain ground, and his Lordfhip's example having been followed by many of the other proprietors, and by several of the more intelligent farmers in other parts of the country, the system of agriculture, the circumstances of the tenants, and the general appearance of the country, became thereby greatly improved, though it is no doubt possible to carry on these and other improvements to a much greater extent, were the proprietors to give that encouragement to the tenants, without which it is in vain to suppose that any solid or substantial improvement can be brought about in any country.

Though the tenants are not bound by their leases to follow any fixed or steady rotation of cropping, and tho' few of them adhere strictly to any one particular system, yet on the farms occupied by the proprietors, and alfo on the large farms, where the lands are inclosed and subdivided, a considerable proportion is annually under fallow, turnip and other green crops, and generally near one third of the farm is under sown grafs. The quanti-

ty of grafs seeds commonly sown, is 8 lb. red clover, 8 lb. white clover, with a small proportion of rib-grafs seed, and two buſhels rye-grafs seed, on each acre. The grafs is cut the first year for hay, and pastured at least two, and sometimes three years thereafter. On the small farms in the interior and remote parts of the district, little alteration of system has hitherto taken place. What is most worthy of notice is, that the ridges are better straighted, and that a small plot of sown grafs and turnip are to be seen on almost every farm.

The mode of culture adopted for raising the different crops on the more improved farms in the district, is as follows :

Wheat. From the preceding account of the climate, it will be inferred, that the cultivation of this species of crops must be limited to that part of the district lying along the coast ; but even there, owing to the lateneſs of the harvests, and the quantities of rain which generally fall in Autumn, the number of acres in wheat is inconsiderable in proportion to the after crops ; it is sown after fallow, potatoes or grafs.

In the course of the fallow, the land is plowed in the beginning of winter, again after the barley seed is finiſhed, and two or three times afterwards, according as the situation of the ground may require, or the season will permit. Before the last furrow is given, which generally happens in September, manure is applied ; when wheat is sown after potatoes or grafs, one plowing is deemed sufficient. The quantity of seed allowed to the acre, is from 12 to 16 pecks, according to the time of sowing. The species most cultivated here is the common red, and the Eſsex *white* wheat.

Oats is here considered as the staple grain, and cultivated in much greater quantities than any other species, oat-meal being still the general food of the inhabitants, and on which also the tenants principally depend for payment of a considerable part of their rents. Oats are sown after grafs, barley, turnips, pease, wheat, and sometimes after oats. The ground is plowed either in Autumn, or in the Spring, as the weather will permit, and about four firlots Linlithgow measure is sown on each acre, and the returns are from 6 to 7 bolls the acre, though often in favourable seasons considerably more on such farms as are in a high state of cultivation. Several species of early oats were introduced into this country in the spring 1783, when many of the public-spirited proprietors, particularly the Earl of Fife, sensible of the great risk of sowing the damaged grain of the preceding crop, imported very considerable quantities for the accommodation of his tenants. But what are most generally cultivated, are a kind common in the country, and known by the name of *early* oats, in contradiftinction to those common in the neighbouring province of Moray, which are about a fortnight later of being ripe.

Barley was, during the continuance of the ancient system of husbandry, considered as the most valuable crop, and was cultivated in much greater quantities than any other kind of grain, except oats. But since the introduction of turnips and sown grafs, and since the breeding and rearing of stock have become objects of great importance, the quantity of barley annually sold has decreased, though the returns by the acre are much more abundant. This crop is sown after oats, pease, or turnip; when after oats or pease, the land is three times plowed, the first plowing being given soon after the harvest; the second, which is here called stirring, is perform-

ed when the oat-seed is finished, and immediately after, the manure, which had been procured in the course of the former winter, is spread on the ground, which is again plowed in the month of May, when seed at the rate of 14 or 15 pecks is sown on the acre. The returns are from 6 to 8 bolls on the acre. Barley, the produce of such farms as are now under review, weighs from 17 to 19 stones Amsterdam per boll, in good seasons: the common Scots barley is the only species generally raised here.

Pease and *Beans* are not cultivated in great quantities here, and very seldom together. In the interior and more remote parts of the district, beans will not come to maturity. They succeed wheat or oats, and are generally sown after one furrow, which is given sometimes in Autumn and sometimes in Spring. The quantity of pease sown is generally about five firlots, and of beans six firlots wheat measure, to the acre. The returns are very variable; in a favourable dry season, from six to ten are often reaped off the acre; but when the season is wet and rainy, the crops of grain are very deficient.

Potatoes. The cultivation of this root came into general practice here about forty years ago. They are now raised in considerable quantities on every farm, and the poorest tradesman and labourer, as well as the most extensive farmer, raise a sufficiency for the use of their families. The white kidney kind is chiefly cultivated here. They are now generally planted on land prepared by the plough, and drilled and horse-hoed like other green crops. The general introduction of potatoes, as a crop in the open field, is, without doubt, the most important improvement in agriculture that ever found its way into this kingdom, particularly to the more northerly parts of it, where

where the crops of grain are often injured by the lateneſs of the harveſts; for had not this valuable root been in general uſe in this diſtrict in the ſpring of 1783, it is very probable that many of the inhabitants would have periſhed for want of food, or their living conſtantly on the damaged oat-meal of the preceding crop, would have been the means of generating diſeases, which might have proved fatal to them.

Turnip. It has been already obſerved, that the late Earl of Findlater was the firſt who introduced the turnip husbandry into this country about the 1748, and though this crop is now common on almoſt every farm, it is not, however, cultivated to ſo great an extent as it ought to be. The land is plowed three times, and the ſeed is ſown in drills from eighteen inches to three feet diſtance from each other, and from the 10th to the 25th of June is the ordinary ſeed time. The crop is conſumed partly in feeding cattle for the butcher, and partly by the milch cows and young cattle.

Flax is cultivated to a conſiderable extent in this diſtrict, and to advantage. It is partly manufactured for the uſe of the inhabitants, but much the greater quantity is manufactured for exportation, as has been already more particularly mentioned. An acre of Flax ſold on the field before pulling, gives from L. 7 to L. 8, and ſometimes from L. 10 to L. 12.

Implements of Huſbandry.

The implements of husbandry all over this diſtrict about forty years ago, were, as may eaſily be ſuppoſed, very rudely conſtructed. In thoſe days, creels, or *currocks*, a ſemicircular baſket made of twigs, and fixed one on each ſide of the horſe by means of a kind of ſaddle, supplied

supplied the place of the dung cart, and were also employed in carrying the ſtock of fuel from the moss. The grain, meal and lime, (of which laſt article from 50 to 60,000 bolls were annually exported, as will be more particularly mentioned hereafter,) were carried in sacks on horses backs, often for ten, fifteen, and sometimes twenty miles on a ſtretch. The only plough used in the country, was the kind now generally known by the name of the Scots plough, and which, with the ordinary and poorer class of tenants, ſtill retains its place, after having undergone some little improvement.

The late Earl of Fiſdlater, about the year 1748, when he commenced his farming operations, imported ploughs, harrows, and other implements of husbandry, ſuch as were then used in England, and in the beſt cultivated and moſt improved parts of Scotland. The other proprietors and severals of the moſt intelligent farmers followed his Lordſhip's example, and either imported these implements of a more improved conſtruction, or employed the tradesmen in the country to make them from the pattern of those which had been imported.

The ploughs, carts, harrows, and other implements of husbandry, on the farms occupied by the proprietors, and of those in the poſſeſſion of the more intelligent and subſtantial tenants, are now framed nearly on the model of those used in the moſt improved parts of the kingdom. On some of these farms, trains drawn by two or four oxen, and carts drawn by two horses, have of late been introduced; but unleſs conſiderable sums are expended in repairing the roads, there is no chance that carriages of this description can come into general use.

Threſhing-mills have also been introduced of late, and the advantages of them seem to be so well known and eſtabliſhed, that there is no doubt of their soon coming

into general use. On the small farms in the higher part of the country, the implements of husbandry are nearly the same as formerly described. The only improvements worth taking notice of, is, that the creels, or *currocks*, are now generally laid aſide, and small carts, suitable to the ſtrength and ſize of the horses in that part of the country, have been introduced.

Farm Houſes and Offices.

It was the ancient cuſtom in this diſtrict, as well as in every other part of the kingdom, to have the farm houses placed together so as to form small villages. In those days also the tenants poſſeſsed their farms in runrig, or runfield. The chief reason for the introduction of these practices, seems to have been the idea of protection, as by thus living together, and poſſeſsing a mixed kind of property, the inhabitants would be more enabled, and at the same time more disposed to protect themselves and their property from these bands of freebooters, who so frequently committed depredations on the low part of the country; but gradually, as the manners of the people became more civilized, and the laws and authority of government came in consequence to be more respected, these cuſtoms began to lose ground; runrig and runfield are now scarcely known here; and where the farms have been granted in lease to one tenant, in place of four or five, these villages have of course become unneceſsary.

When new houses were requiſite on a farm, it was the practice for the proprietor to furniſh the timber, and for the tenant to carry the whole of the materials, and be at all the other expence of erecting the fabric. On the expiry of his lease, the houses were given over to the next entering

entering tenant; he, on the one hand, receiving from his predeceſsor any such sum, as the persons mutually chosen had determined, as the extent of damage which the timber had suſtained during the former lease; and on the other, becoming bound to leave it at his removal equal in value to the original coſt. By these means there is a certain extent, of what is here called *maſter's timber*, on every farm in the country, which becomes a burden on the incoming tenant, and may account in some measure for so little alteration having taken place in the accommodation of the middling claſs of tenants; as this maſter's timber, for which the new tenant generally pays a sum, which to him is conſiderable, would be of little or no value if taken off the houses, or applied to any other purpose.

The firſt farm houses and offices conſtructed on regular plans in this diſtrict, were built by Lord Findlater's tenants on his eſtates between Cullen and Banff, about the year 1759. This improvement was the natural conſequence of leases, which his Lordſhip had granted, as by three or four farms being joined into one, new houses on a more extenſive scale, and in a more centrical ſituation, became neceſsary. Such farm houses and offices are not *now* peculiar to any one particular part of the diſtrict: On every eſtate where the proprietors have entered into the liberal ideas of enlarging the ſize of the farms, such buildings are to be seen. The dwelling-house conſiſts of two ſtories built of ſtone and lime, covered with ſlate, and neatly and commodiouſly finiſhed within. The offices, which generally form three ſides of a square, are also built of ſtone and lime, and either covered with slate, tyle, or a subſtantial thatch of ſtraw. It is, however, proper to obſerve, that the expence of erecting these buildings,

buildings, and the total loſs of the value of the maſter's timber, originally on the farm, falls entirely on this deſcription of tenants, who, on account of their thus acquiring an extent of land to rent, ſo far beyond what is the lot of the general run of tenants in the country, agree to furniſh themſelves with the neceſsary accommodation of houſes, on condition of their being allowed a certain ſum at the expiry of the leaſe, and which in no caſe exceeds two years rent of the farm, but which in *every caſe* muſt fall much below the original expence, even if no intereſt for the money originally expended is brought into the calculation.

The habitations of the poorer tenants, mechanics, and labourers, have for a long ſeries of years been conſtructed in a much ſuperior manner to thoſe in ſimilar circumſtances, in any other country north of the Grampian mountains. They are generally built of ſtone and clay, and pointed, or harled with lime, and properly thatched with ſtraw. The only improvement that has recently taken place, is a ſmall window or two with panes of glaſs, in place of an aperture, which was formerly ſhut by a board. The dwellings, however, might ſtill be improved by enlarging the ſize of the windows, and laying the floors with wood, brick, or ſtone, in place of earth, of which they are at preſent compoſed. This probably might tend more than any other meaſure to introduce new ideas reſpecting the comforts of life, and thereby induce this claſs of people to adopt modes of induſtry, at preſent unknown to them, though now in general practice among their neighbours in the more ſoutherly, and more improved parts of the kingdom.

To the credit of the proprietors, it ſhould be obſerved, that there are more towns and villages erected under *feu-*

charter

charter in this country, than any north of the river Tay. The houses in these towns and villages are built of the beſt materials, and finiſhed in the moſt ſubſtantial manner, and the avidity with which the inhabitants in the neighbourhood grasp at every new opportunity of acquiring these holdings, is a ſufficient proof of the increase of manufactures, and the good faith under which these *feus* have all along been granted.

Labourers, and the Price of Labour.

It has been observed, that by far the greateſt proportion of the inhabitants are employed in agriculture; but a very conſiderable number are engaged in commerce, manufactures and fiſheries on the coaſt, which, added to the emigration of great numbers of both sexes, of the lower claſs, which takes place yearly to the south of Scotland, has tended to raise the price of labour in this diſtrict, which is nearly doubled within these fifteen years.

The wages of an ordinary ploughman, are from L. 6 to L. 7 Sterling by the year, and those of a woman, from L. 2 to L. 3. A man engaged for the harveſt, which generally laſts 6 or 7 weeks, though frequently much longer, receives L. 1 : 10, and a woman about L. 1. A labourer hired by the day, for caſting peats, cutting hay, or in harveſt, receives 10 d. and his victuals, and in winter, 6 d. or 7d. with his victuals.

In spring, summer, and autumn, the labouring cattle are worked for about four hours in the morning, and for the same space in the afternoon, and in winter between four and five hours in the day.

All the corns are threſhed by the farm servants, which operation, together with the manufacturing of them, and carrying the meal to the markets at the different seaports, conſtitute moſt part of the winter's work.

The

The servants are in general maintained in the family. Those who have families, and reside in detached houses on the farm, beſides their house and a ſmall garden, have ſix and a half bolls of oat meal, at 8 ſtone Amſterdam, and generally have a cow's graſs allowed them, and their fuel carried home by the farmer's horſes.

The ordinary mode of maintaining the farm ſervants who reſide in the family, is ſo ſimilar to that which is practiſed in the neighbouring county of Elgin, and which was fully detailed in the report of that diſtrict, that it appears unneceſſary to enter into particulars here. It is only proper to add, that oat-meal and potatoes are the principal food of the ſervants, labourers, mechanics, and poorer tenants; though on Sundays and Chriſtmas holidays, they have butcher's meat and fiſh on many occaſions.

Roads and Bridges.

The public and parochial roads in this diſtrict are in general in a very wretched ſituation. The great poſt road from Banff to Fochabers, is not kept in ſuch a ſtate of repair as might be expected, conſidering that there are few counties more populous, and more closely inhabited, than the one through which this road paſſes. Many of the rivulets are yet without bridges of any kind, and in some places the road is conducted in the worſt poſſible direction. This is particularly the case at the bay of Sandend, between Portsoy and Cullen, where the road is carried down a very ſteep hill on one ſide of the bay, and made to aſcend one equally high on the other; while at the entry of the bay, from either ſide, the traveller has to ford a conſiderable ſtream of water, which

is often swelled, not only by extraordinary floods, but by high tides, which repel the waters in their courses, and thereby render the paſsage difficult, and often dangerous. In the month of December laſt, the poſt-boy very narrowly escaped being drowned, in consequenc of a high tide, while the rivulet was in flood at the same time. This evil might be remedied, and a much better level obtained, were the road carried along the high grounds on the south ſide of the bay.

The public road from the south ſide of the county, by Keith to Fochabers, is perhaps the worſt in Great Britain, having been in a great measure neglected almoſt ever ſince its original formation, under the direction of the late Earl of Findlater, and muſt soon become totally impaſsable, unleſs very great exertions are made by those proprietors whose eſtates are connected with it; at present, it is really in the higheſt degree dangerous for ſtrangers to attempt to travel from Keith to Fochabers in winter.

The roads from the interior parts of the country to the sea-ports of Banff, Portsoy, and Garmouth, are much in the same ſtate with the one laſt mentioned, and are in a manner impassable for several months in winter. In the more remote parts of the diſtrict, greater attention seems to be paid to the roads. In this respect the pariſhes of Mortlich, Glaſs, and Botriphney, are better accommodated than the pariſhes nearer to the coaſt. Those in Botriphney are conſtantly kept in better order than any other in the county. This is owing to the great attention which Alexander Mill Eſq; of Chappleton, factor for Mr Duff of Drummure, has for many years paid to making and keeping the roads on that eſtate in proper repair; an ex-

ample

ample well worthy the imitation of every person in the diſtrict, entruſted with the execution of this branch of police, as by his uncommon exertions and ſteady application, he has demonſtrated, that even in this deep swampy ſoil, it is poſſible to make good roads. But it is unfortunate that the advantages of them are comparatively of little conſequence to the inhabitants of that part of the county, becauſe, when they leave their own pariſh, on their way to the ſea-ports, with the produce of their farms, they have to encounter all the difficulties and inconveniencies, that are to be expected on roads, to the repairs of which no attention is paid.

Conſidering the great quantity of meal and grain which is annually exported from this diſtrict, and the diſtance at which the great body of the farmers reſide from the ſea-ports, certainly no greater improvement could be introduced, nor one, however expenſive, that would be more for the intereſt of the proprietors, than that of good roads. It is evident, that the farmer in every country pays rent conform to the advantages which he enjoys; and it is equally clear, that though good roads in that country would no doubt coſt a very conſiderable ſum, yet even if the proprietors were to be at the whole expence, without applying to Parliament for leave to erect toll bars, ſtill they would receive a high intereſt for the money ſo expended, in the additional rent which the farmers would chearfully pay for the accommodation. There is no doubt but four or five times the quantity of meal or grain would be carried on one cart, from the pariſhes of Mortlich, Glass or Botriphney, to Portsoy or Banff, more than at present, if the roads were good; and therefore any perſon that will calculate the

saving of time, of expence, and of tear and wear of horses, carts, harneſs, &c. will be able to form some idea of the loſs which the agricultural intereſt of this diſtrict ſuſtains by the roads being allowed to remain in their present disgraceful ſituation.

It is scarcely poſſible, that under the act 1669, the roads in this country can ever be made tolerable. If upon inquiry, it is found that the agriculture and commerce of the country in their preſent ſtate will not afford making turnpike roads; yet another plan might be adopted, which would certainly be attended with very beneficial consequences, viz. that of applying to Parliament for a particular road act for the diſtrict, by which the ſtatute labour might be converted, and a ſum thereby annually collected, which, if properly applied to the repairs of the roads, would do more service in one year, than is done in seven, under the present management. Such road acts as above mentioned, were procured some years ago for the counties of Perth, Angus, and lately for Inverneſs-ſhire: But as the proprietors of Aberdeen-ſhire have it ſeriouſly in contemplation to apply for leave to make turnpike roads in that part of the country, it is to be hoped that the public spirit of the gentlemen in this diſtrict will induce them to follow so laudable an example; which would eſſentially promote the improvement of agriculture and commerce, as well as their own intereſt, and the ease and convenience of the inhabitants.

In the report of the county of Elgin and Forres, the great utility of a bridge or bridges acroſs the river Spey, in order to open a ſafe and eaſy communication to this diſtrict, was fully pointed out. It is therefore unneceſſary to enter ſo fully on the ſubject here. It may however

however be added, that if it ſhall be found impracticable at preſent to raiſe a ſum neceſſary for erecting a bridge at Fochabers, which is much to be feared, the proprietors of both ſides of the river, at the boat of Brigg, would not only greatly promote their own intereſt, but alſo do an important ſervice to the North of Scotland at large, were they to adopt the proper meaſures, in order to get a bridge built across the river at that place. The ſum requiſite would not exceed L. 3000, a conſiderable part of which might eaſily be obtained by voluntary ſubſcription, were the Earl of Findlater, who is the greateſt proprietor, and conſequently moſt intereſted in bringing about this improvement, to give up any trifling rent which he may receive for the paſſage boat, and begin the buſineſs by a liberal donation. Should the ſum thus procured be inadequate for the purpoſe, an act of Parliament might be obtained, and a very ſmall toll or pontage would not only ſecure a fund for payment of the intereſt of the ſum to be borrowed, but alſo ſuch a ſum as would keep the bridge, when built, in a complete ſtate of repair. As the Earl of Findlater reſides abroad, it is to be hoped his men of buſineſs, who pay the greateſt attention to his intereſt in the management of his eſtates, will repreſent the importance of this improvement, in ſuch a manner, as to induce his Lordſhip to take the lead in effecting an object, which, when attained, would ſo greatly promote the improvement of the country.

In the report above referred to, the forming a new line of road from Portſoy to Elgin, was ſuggeſted as a proper meaſure, in caſe a bridge was erected at Boat of Brigg. The advantages of a road in that direction were particularly mentioned, in ſo far as concerned the county of El-

gin. From the ſtate of the roads in this diſtrict, as before described, it is obvious that the farmers who reſide in the interior and more remote parts of the country, have very great difficulties to encounter in carrying the produce of their farms to market, and the merchants and manufacturers about Keith, Newmill, and the other villages in that corner, labour under the like inconveniencies, in conveying their goods to and from the sea-ports.

In order to promote improvements in agriculture, and the increase of manufactures in that part of the country, it is humbly suggeſted, as a proper measure, to form a new line of road to Portsoy, on the beſt poſſible level to Keith or Newmill, from whence one branch ſhould be carried to the Boat of Brigg, nearly in the direction of the present road, and the other to Mortlich. This road, after leaving the coaſt, would run through the pariſhes of Grange, Keith, Botriphney, and Mortlich. Another road from Banff, keeping as near to the north banks of Doveran, as the nature of the grounds will permit, and to join the other road near to where the roads from Banff, Portsoy, and Cullen, to Keith, now meet in the pariſh of Grange, would open an easy communication from the moſt extenſive and moſt valuable tract of arable land in the county, to the sea-ports of Banff and Portsoy; the advantages which muſt neceſſarily result from adopting this plan, muſt be so evident as to require no illuſtration here.

It is not uncommon, when any public measures of this kind are proposed, that people, who have other views, suggeſt so many real or imaginary difficulties and inconveniencies likely to ariſe from carrying them into effect, as greatly to embarrass and retard the execution. It ought, however, to be remarked, that in the course of the sur-

vey, on which the report is founded, the idea of erecting a bridge at Boat of Brigg, and forming new lines of road from Banff and Portsoy, through the centre of the diſtrict to that bridge, and from thence to Elgin, was conſidered by all ranks as an object of the greateſt importance, and more likely than any other to promote the internal improvement of both countries. One objection indeed, though it appeared imaginary rather than real, was ſuggeſted, viz. That the snow would often lie so deep in that part of the country, as to render the road impaſſable for wheel carriages; but it ſhould be obſerved, that though the snow may diſſolve more ſlowly for a ſhort space in winter on this proposed tract of road than on the other; yet in the depth of the fall of snow on either road, there is little difference at any time.

It appears only neceſſary again to repeat, that from every information that could be procured, there are no measures likely to be adopted, which ſtand a fairer chance of introducing a general spirit of improvement in agriculture, extending the manufactures, and promoting the internal improvement of that part of the kingdom, than forming proper lines of road, keeping them in subſtantial repair, and building bridges where neceſſary. It is therefore to be hoped, that the Honourable Board to whom this report is addreſſed, in conjunction with the proprietors of that part of the country, will form and carry into execution such plans as may appear to them beſt calculated for attaining objects so highly beneficial and important.

Markets and Fairs.

There are regular weekly markets held in the towns of Banff, Cullen, Portsoy, Keith and Fochabers, for the sale

ſale of meal, butcher meat, poultry, eggs, butter, cheeſe, linen yarn, and ſuch other articles as the country people can ſpare.

Though the price of fiſh, and all other kinds of proviſions, are more moderate here than they are in the ſouth part of the kingdom, yet they have increaſed in value fully 50 per cent. within theſe laſt twenty years.

The price of Butcher meat is from		3d. to 4d. per lib.
A Goose	- -	2s. to 2s. 6d.
A Duck	- - -	7d. to 9d.
A Hen	- - -	6d. to 8d.
A Chicken	- -	2d. to 3d.
A dozen Eggs	- -	2d. to 3d.
A pound of Butter	(24 oz.)	6d. to 9d.
A pound of Cheeſe	(do.)	2d. to 3d.

The price of grain and oat-meal for the laſt ſeven years, is aſcertained by the annexed ſtate of the fiars of the county for that period. Beſides the meal and grain neceſſary for the ſupply of the inhabitants, there are conſiderable quantities ſold and carried over-land to Strathſpey and Badenoch every year.

The quantity annually exported from the diſtrict at large, could not be correctly aſcertained, in conſequence of its being under the juriſdiction of different Cuſtom-houſes; but in order to ſhew clearly the difference in the exports of meal and grain, in a good and bad ſeaſon, the following ſtatement procured from the Cuſtom-houſe of Aberdeen is ſubjoined:

Account of Grain and Oat-meal, exported from that part of the County of Banff, ſituated within the precinct of the Port of Aberdeen, between the 5th of January 1787, *and the 5th of January* 1794.

Years.	Quarters Oats.	Quarters Barley.	Quarters Pease.	Bolls Oat-meal.
1787	900	none	none	1000
1788	200	none	none	none
1789	2158	1627	none	12,017
1790	3304	2761	none	10,910
1791	3660	1010	none	6240
1792	3451	1841	75	7277
1793	780	2471	68	11,679
Totals	14,453	9710	143	49,123

It is worthy of remark here, that from the same account it likewiſe appears, that in the period above-mentioned, 193,984 pounds of butter, and 17,920 pounds of cheeſe, were exported within that period.

There are ſeveral ſtated fares held annually in almoſt every pariſh for the ſale of cattle, at which many of the dealers from Angus, and other parts of the ſouth of Scotland, attend. But although, at all theſe fairs, conſiderable numbers of cattle are generally ſold, yet theſe held at Keith are the moſt conſiderable; at one of which it is not uncommon to ſee ſeveral thouſand head of black cattle.

It was impoſſible to aſcertain the number or value of the cattle ſold from this diſtrict yearly, yet from every information that could be procured, it is certain that more money is brought into the country, from the ſale of cattle, than by the exports of grain and oat-meal.

Live Stock.

Before the introduction of improvements in agriculture, and before the demand from England, and the South of Scotland, for North Country cattle, became so great as it hath been of late years, little attention was paid to the different breeds of animals in this diſtrict. They were conſidered as the means by which the lands could be cultivated, rather than as an object of profit to the farmer.

Black Cattle.

Though this diſtrict has been long famous for the beſt and largeſt breed of black cattle in the north of Scotland, yet the manner in which they were treated before the practice of ploughing with horses became common, could not tend to increase their value in reſpect to figure or bone. The increased demand for this species of ſtock, and conſequent high prices, induced the intelligent farmers to pay more attention to the improvement of the breed; and of late years some of the moſt reſpectable proprietors, particularly the Earl of Fife and General Grant of Ballandallach, have spared no expence in introducing from time to time, the moſt valuable breed of bulls and cows from England, Guernsey, the iſle of Sky, and other parts of the highlands of Scotland.

Although the treatment of black cattle by the poorer tenants in this diſtrict, is ſtill much the same that it was fifty years ago, yet the circumſtances above-mentioned, joined to the attention which is now paid to preserving the moſt promiſing for the market, and for the propagation of the ſtock, the general introduction of turnip husbandry, the attention excited in other countries to this important object, and the improvements lately introduced here, of managing the plough and cart by a pair of

oxen, have tended in a no small degree to the improvement of the breed in point of ſize and figure, ſo that the price has been conſiderably advanced, perhaps nearly doubled, within these twenty years. The average price of oxen sold in this diſtrict may be reckoned at five guineas each. Middle-ſized oxen, when fat, weigh 36 ſtone Amſterdam.

Horses have been employed on the larger farms for several years paſt in preference to oxen. Wherever that has happened, particular attention has been paid to improve the breed, and conſidering that the country is in general ſtill open and uninclosed, it is surpriſing to what an extent the farmers have ſucceeded in improving the ſize and ſhape of this species of ſtock. The ordinary price of the beſt horses used for draught twenty or thirty years ago, did not exceed ten or twelve pounds, while now, eighteen or twenty pounds is by no means conſidered as an extraordinary price.

In the higher parts of the diſtrict, where oxen ploughs are ſtill commonly used, and among the poorer tenants all over the country, a good young horſe for the cart may be purchased at eight or nine pounds; and it is worthy of remark, that many such might be found in this diſtrict, which, if taken up before being worked, and kept properly for a year or two, would make excellent hardy ponies for the ſaddle.

Sheep. Some of the more subſtantial farmers in the low part of the country, have introduced the Northumberland, or Culley's breed of ſheep, producing a fleece of from eight to twelve lib. Amſterdam, and weighing from ſixteen to twenty lib. per quarter. These when firſt brought into the country sold for thirty or forty ſhillings each, but they have ſince fallen conſiderably in price, and from that circumſtance

circumſtance, added to the extra expence of maintenance, and the additional care of them, which is neceſſary, it begins now to be doubted here, whether they are the moſt profitable breed for the country. In the higher parts of the diſtrict, a conſiderable number of the black-façed or Linton breed are to be seen. Their properties are so well known, as to render any deſcription here perfectly unneceſſary.

The only other breed is a small white-faced kind, the antient breed of the country, and though not equal, either in point of weight or the value of fleece, to the Linton breed, yet by proper management, their wool, which is very fine in quality, might be greatly improved in quantity. But it muſt be acknowledged, that great ignorance and inattention prevails here in regard to the proper management of these useful animals, numbers of them periſhing yearly under the rot and ſcab, which might be prevented by an ordinary degree of care.

Swine are reared in conſiderable numbers at all the mills and diſtilleries in the diſtrict, and a few are, to be seen in the farm-yards of the principal tenants; but as pork and bacon are by no means the favourite food of the inhabitants, and the utter averſion of not a few, the market for the sale of them is very limited. But for many years bygone, butchers from Aberdeen have been in the practice of coming into the country every year for the purpose of purchaſing all that they can find fit for their purpose; and it is not uncommon to see herds of two or three hundred carried off at a time. It ſhould be observed that Aberdeen has long been noted for salted and pickled pork, and it forms no inconſiderable article of export from that harbour.

Woods and Plantations.

From the present appearance of the country, it is certain that about forty years ago, it was in general very deſtitute of wood. About that time the ſpirit for planting ſeems to have been introduced; but though there are now a great many extenſive plantations along the coaſt, particularly around the family ſeats of the Duke of Gordon, and the Earls of Fife and Findlater, and alſo ſeveral conſiderable tracts of planting in other parts of the country, yet, upon the whole, little attention ſeems to have been paid to ſhelter the arable lands, ſo as to improve the climate. There are perhaps few countries where this mode of planting would be attended with more beneficial conſequences, as from the high and expoſed ſituation of a great proportion of the corn fields, as has been already obſerved, the climate muſt naturally be cold and late; and if by any means the harveſts could be brought forward ten days or a fortnight earlier, the damage which ſo often happens to the later part of the crops would ſeldom take place, as, in general, the weather in the firſt two or three weeks of the harveſt is as favourable here, as in any part of the north of Scotland. It is however impoſſible to carry on this mode of improvement to any extent, unleſs the lands were claſſed together into regular farms, and inclosed and ſubdivided: Were this done, and belts and clumps of trees planted in proper ſituations, there is every reaſon to believe that the climate would in time be thereby much improved. It may be proper to remark, that the higher and more expoſed the lands are, the belts of planting ought to be the broader, as in ſuch ſituations trees will not thrive unleſs they are planted thick, ſo as to afford ſhelter to one another. In order to encourage the tenants to preſerve ſuch plantations from any damage

by their cattle, it might be proper to follow the plan adopted by the late Earl of Findlater, with several of his tenants, of giving them, at the expiry of the lease, every third tree (or the value in money) which had been planted during the currency of the lease. Intereſt is the tye which has the ſureſt hold of mankind, and a compact on this principle between landlord and tenant is much more likely to ſecure the preſervation of trees than any other meaſure that can be adopted.

In the more remote parts of the diſtrict there are conſiderable tracts of natural woods, conſiſting of oak, alder, birch, &c. on the ſide of almoſt every rivulet, particularly on the banks of the waters of Avon, Livat, Fiddich, and Dulnan; of which many of the implements of huſbandry uſed in that part of the country are conſtructed. There is but a ſmall proportion of the Scots fir arrived to ſuch an age as to be fit for domeſtic purpoſes, and therefore a great part of the country is ſtill ſupplied with wood which is floated down from the foreſts of Strathſpey. The period however is not far diſtant, when the diſtrict will be able to ſupply itſelf, and alſo ſpare for exportation.

All the proprietors in the country ſeem at preſent to poſſeſs a ſpirit for planting, and if in place of covering extenſive tracts of barren heath with trees, which can only tend to the improvement of theſe particular ſpots, they were to plant ſtripes and clumps of trees among the arable fields, it would not only ornament the country, but improve the climate, which muſt be acknowledged by all to be an object of the greateſt importance to this country, and which, if attained, would be cheaply purchaſed on almoſt any terms.

Miscellaneous Observations, and Hints for Improvement.

From the preceding report it appears, that a spirit for improvement has been pretty generally introduced, and that if the proprietors at large were to ſtudy their own intereſt ſo far as to give the neceſsary encouragement to their tenants, the ſtill greater improvement of the country might be thereby effected.

The climate of this diſtrict, it will be generally acknowledged, is more favourable to the cultivation of graſs than grain, and to introduce a rotation of cropping, by which one half of the farm was to be conſtantly under sown graſs and turnip, would turn out to be a measure highly favourable to the intereſt of landlords and tenants, as from the beſt information, there is every reason to believe, that for a series of 70 or 80 years back, such rainy late seasons have recurred once in four or five years, as have greatly damaged, and on some occaſions, almoſt totally ruined the crops, the corn often remaining on the fields till the middle or end of December. Such tenants as have their farms inclosed and subdivided, pursue nearly the above mentioned system, and after several years experience, have found their advantage in their doing so, not only from the superior crops of grain which they reap, but also in the improvement of their live ſtock. It being obvious, that cattle reared in ſheltered inclosures, enjoy plenty of food and their natural freedom, muſt rise in bone, figure, and value, greatly above those which are reared in an open exposed paſture, reſtricted often to a narrow field, and pent up every night in a fold. The superior price which Banff-ſhire cattle are sold for, in the South country markets, compared to the breed of any other diſtrict in the North, and the quantity of butter which is annually exported, amount to complete evidence of its

being an excellent grazing country, and ſhould induce the proprietors to try, by every poſſible means, to introduce this ſyſtem of husbandry into more general practice: But it is impoſſible to do this with effect, unleſs the farms are enlarged, inclosed and subdivided. In general, there is great abundance of ſtone quarries in the diſtrict; but as in some particular places, ſtone is not to be had without great expence, hedge and ditch might be subſtituted in place of ſtone fences. It may be safely ſtated, that if the farms were inclosed, every arable acre in the district would yield the proprietors, on an avarage, from five to ſix ſhillings of additional rent, and the tenants at the same time would live more comfortably, and become more useful members of the ſtate. This great improvement can only be effected in one of two ways. The firſt, by the proprietors being at the whole outlay, on receiving a reasonable intereſt from their tenants for the money so expended, or by their granting leases of such duration, and on such equitable terms, to subſtantial and intelligent farmers, as to induce them to undertake the buſineſs at their own expence, which has hitherto been the practice in this diſtrict. Were this plan to be adopted, it is impoſſible to ſtate with any degree of certainty the advantages both of a public and private nature, that would neceſſarily result from it; but if reference is had to those countries where such improvements have been made, some idea of the extent may be formed.

The draining of land seems to be a mode of improvement very little known or practised here, though there are few countries where it could be done at leſs expence, and perhaps none in which greater advantages would result from proper well conſtructed drains. The arable lands generally lie more or leſs in a sloping direction, which allows a ready deſcent to the water which falls from the

clouds, and would of course render the drains leſs expenſive, and the nature of the ſoil, which is in general retentive of water, would be much improved, as by keeping the lands free of ſurface water, during the winter and ſpring, and planting belts and clumps of trees, ſo as to procure ſhelter, there can be no doubt, but the climate would be thereby improved, which, from what has been ſtated, muſt appear to be an object of the very firſt importance to every perſon concerned in the cultivation of the ſoil.

Though there are few countries which poſſeſs a more abundant ſtock of limeſtone, and indeed very few in which a greater quantity of lime is manufactured, yet it has by no means come into general uſe as a manure. Thoſe who poſſeſs the moſt improved farms do indeed uſe it, and from experience find that it anſwers their moſt ſanguine expectations; but the general run of tenants, particularly thoſe in Strylla or Strath-Iſla, though they manufacture 40 or 50,000 bolls annually, and ſell it at the low price of 6 d. or 8 d. the boll, equal to 64 Scots pints powdered lime, after the trouble and expence of carrying it ten or fifteen miles, yet they rarely ever think of applying it as a manure to their own farms. Though this trade of manufacturing lime for other countries, no doubt, brings ſome money into the diſtrict, and enables the people who are employed in it to pay their rents; yet conſidering the diſadvantages under which they labour, no one will pretend to ſay, but that theſe people could be more uſefully and more profitably employed, both for themſelves and the public, in other lines of life. In place of burning the lime ſtone in ſmall, ill conſtructed open kilns, (which is the practice at preſent, and by which, perhaps, nearly double the quantity of fuel is conſumed that would be requiſite if the kilns

were built larger, and of a more perfect conſtruction), and in place of a great number of people being thus employed, who poſſeſs ſmall farms, and who generally cultivate them in the worſt poſſible manner, it would be, no doubt, for the intereſt of the proprietors, were they to erect proper kilns at their own expence, and employ experienced perſons to manufacture lime; for it cannot be ſuppoſed that theſe men can do as much work, as the ſame number would do, if by a proper diviſion of labour, and under the direction of proper perſons, they were confined each to that part of the work to which he was accuſtomed. The tenants ſhould alſo be bound by their leaſes to lay on a certain quantity of lime yearly on their farms, under ſuch rules and regulations as are adopted, and have been found by experience to anſwer in other countries. Lime, by this mode of management, could be afforded at a lower price, the uſe of it as a manure be generally introduced, and the ſituation of the people now employed in that trade, would become more comfortable, by their being at liberty to devote their *whole time* and attention to the proper cultivation and improvement of their farms, or by their being employed in manufactures.

From what has been formerly ſtated, it appears that the value and extent of the whole fiſheries on the coaſt are pretty conſiderable, and if any improvement could be made in regard to the ſituation of the people, it is certainly an object that ſhould be attended to. There are from 46 to 50 boats uſually employed in this trade, along the coaſt of this narrow diſtrict, and about 300 men. They are in general a ſober induſtrious race of people, and very attentive to the buſineſs in which they are engaged. At the period when the ſurvey of this country was made (December 1793) an immenſe

quantity of haddocks were daily caught; but such was the scarcity and extravagant price of salt, which was selling at 2 d. and 3 d. per pound, that the fiſhers could not go on in the usual manner to salt that extra quantity of fiſh which they had caught, and which they found was above the ordinary consumpt of the country.

Whether this scarcity and high price of salt arose from a real or artificial scarcity, it is not neceſsary here to enquire; but if any regulation could be made in favour of these people, and others in the like situation, on other parts of the coaſt, in regard to that neceſsary article, it would tend to increase the value of the fiſhings, and could not in any perceptible degree affect the revenues of the ſtate.

In time of war, these people, from a conſtant apprehenſion of being preſſed on board ſhips of war, are compelled to forsake their natural element, and to seek protection in the moſt remote parts of the highlands; while their families, which generally conſiſt of a wife and five or ſix children, remain at home in a ſtate of extreme wretchedness. It might be worthy the attention of government to conſider of some plan, by which this useful class of people might be enabled to follow their occupation at all seasons without fear or dread. Perhaps, if at the commencement of a war, every two boats were to furniſh an able-bodied seaman, which would be chearfully agreed to, it might be proper, in that case, to grant a *full and ample* protection to the remainder during the whole course of the war; and it is probable, this would be a fair and equal arrangement, as a very great proportion of these fiſhers are old and unfit for service on board ſhips of war, and therefore would not be taken even in a time of the hotteſt press. Some such compact as

this

this exiſts betwixt government and the inhabitants of Shetland. They furniſh one hundred ſeamen for the Royal Navy upon any extraordinary emergency, and the whole fiſhermen belonging to these iſles are thereafter allowed to proſecute their buſiness without any apprehenſion of being viſited by a press-gang.

One other hardſhip these people labour under, but which is felt equally severe by all those who are engaged in ſhipping, commerce and manufactures along this coaſt. This is the want of a Cuſtom-house in a centrical ſituation. At present no goods can be ſhipped or landed, nor any veſſels be allowed to sail without the necessary permiſſion, which muſt be procured either from the Cuſtom-house at Aberdeen, fifty miles diſtant on the one hand, or from Inverness, at the diſtance of ſixty miles on the other. If a deputation on a small scale was granted from the Board of Cuſtoms, to two or three persons reſiding in Banff, to negociate the buſiness, it would certainly tend to promote the trade and manufactures of the country, and the additional expence muſt be very trifling indeed.

The great obſtacles to the improvement of this diſtrict have been pretty fully detailed in the course of the preceding report. These which appear moſt formidable are the small ſize of the farms in general; the great expence to which an improving tenant is obliged to submit in erecting proper houses and fences; the ſhort duration of the leases which are granted to tenants of this description, the severe aſtrictions to mills, and the wretched ſtate of the roads. These, however, are difficulties which the proprietors might with a proper attention to their own intereſts and to the prosperity of the country, eaſily remove. Were that done, and the means of improvement

provement which have been hinted at introduced, such as building farm-houses, enlarging, incloſing and subdividing the farms; planting clumps and belts of trees, so as to ſhelter the arable fields, draining the lands, obliging the tenants to have nearly the half of their farms under sown grass and turnip, and to use lime as a manure; there is no doubt but the proprietors would in twenty or thirty years nearly double their revenue; the ſituation of the tenants would be much improved and trade; and manufactures increase beyond any calculation that can at present be made.

State of the FIARS *of the County of Banff from the year* 1787 *to the year* 1793, *both incluſive.*

Years.	Wheat per Boll.	Barley per Boll.	Oats per Boll.	Oat-meal per boll 8 ſtone Amſterdam.
1787	L. 0 16 8	L. 0 17 6	L. 0 12 0	L. 0 13 4
1788	0 16 8	0 17 6	0 12 0	0 13 4
1789	1 0 0	0 11 8	0 9 4	0 11 0
1790	1 1 0	0 14 6	0 11 0	0 11 9
1791	1 1 0	0 15 6	0 11 6	0 12 6
1792	0 18 0	0 18 0	0 12 6	0 13 4
1793	Not aſcertained.	0 18 0	0 13 4	0 13 4

N. B. The average price of meal in this country for twenty years preceding 1782, was 11 s. 7 d. per boll. By the above ſtatement the average price has been 12 s. 8d. per boll.

[redacted]

GENERAL VIEW

OF THE

AGRICULTURE

OF THE COUNTY OF

BRECKNOCK.

GENERAL VIEW

OF THE

GRICULTURE

OF THE COUNTY OF

BRECKNOCK,

SERVATIONS ON THE MEANS OF ITS IMPROVEMENT.

By Mr. JOHN CLARK,

STEWARD TO THE RIGHT HONORABLE LORD VISCOUNT HEREFORD.

Gt. Brit

N UP FOR THE CONSIDERATION OF THE BOARD OF AGRICULTURE AND INTERNAL IMPROVEMENT.

LONDON:

PRINTED BY J. SMEETON.

M.DCC.XCIV.

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ADVERTISEMENT.

THE following valuable communication, respecting the state of husbandry in the county of Brecknock, and the mean improvement, drawn up for the consideration of the Board o culture, is now printed, merely for the purpose of its being ci there, in order that every person, interested in the welfare county, may have it in his power to examine it fully before it lished. It is therefore requested, that any remark, or ac observation, which may occur to the reader, on the perusal following sheets, may be written on the *margin*, and transmitte Board of Agriculture, at its office in London, by whom the sa be properly attended to; and, when the returns are comple account will be drawn up, of the state of agriculture in Breckno from the information thus accumulated, which, it is believed, found greatly superior, to any thing of the kind, ever ye public.

The Board has adopted the same plan, in regard to all th counties in the united kingdom; and, it is hardly necessary will be happy to give every assistance in its power, to any pers may be desirous of improving his breed of cattle, sheep, & trying any useful experiment in husbandry.

TO THE READER.

IT is requested, that this paper, with any marginal rem
ry be returned to the Board of Agriculture, before the first of M
rt.

It is hardly necessary to add, that the Board does not co
elf responsible, for any fact or observation contained in these Re
hich, at present, are printed and circulated, for the purpose mer
ocuring additional information, and of enabling every one, to cont
s mite, to the improvement of the Country.

January, 1794.

BRECKNOCKSHIRE.

INTRODUCTION.

BRECKNOCKSHIRE is an inland county, and one of the six that compose South Wales. It is bounded, on the north by Radnorshire, on the east by the counties of Hereford and Monmouth, on the south by Glamorganshire, and on the west by the counties of Carmarthen and Cardigan. It is situated in the diocese of St. David's, and archdeaconry of its own name: sends two Members to Parliament, one for the county, and one for the borough of Brecon; and contributes 180 men, as its quota, to the national militia. It is divided into six hundreds, Talgarth, Crickhowel, Penkille, Dwynock, Myrther, and Builth: and into sixty-one parishes. It contains four market towns, Brecon, Hay, Crickhowel, and Builth; 800 square miles, or 512,000 acres of land; 300 acres of water, besides that space occupied by its rivers and brooks. The Welch is the general language of its inhabitants, who may be estimated at 30,000.

The out-skirts of this county, for the most part, consist of lofty mountains, *superficially* barren, except where it is separated from the county of Radnor, by the river Wye, on the north. It is interspersed with hills almost throughout. In the lower part of the county the hillocks, and even the hills, are cultivated a considerable way up, and some of them to the top; but the higher mountains are, in general, very barren, and to the farmer of little use or value.

The river Usk runs nearly through the centre of the county; although it owes its birth to Carmarthenshire, it derives

derives most of its wealth from the mountains and hills of this county. On either side of the Usk, the numerous springs issuing from the mountains, soon form rills, these in a short space become brooks, the further union of which form streams; all these have, in the course of ages, founded valleys, by carrying away the earth, in proportion to their respective degrees of rapidity. The sides of these valleys are appropriated to the operation of the plough, the scythe, or the depasturing of cattle; and the sides of such banks as were too steep to be applied to either of these purposes, are covered with beautiful timber of various kinds, although the oak seems to be lord paramount of the soil.

The mountains and hills of that part of this county, from whence the Usk, and its contributary streams, collect the water, are of the heterogeneous class. The stone, which is of the siliceous genus, is of a dark red colour, and contains a considerable quantity of iron. Since the soil of the flat land, in all mountainous districts, must ever partake of the genus of the stone that compose the surrounding mountains, the characteristic features of the soil under review, is that of a light or sandy loam.

As the valleys are, in general, narrow, and the fall of the brooks, from the surrounding hills, rapid, the defect of the land by the side of the Usk, consists in its having *too small a portion of clay* in its composition. This is easily accounted for, when it is remembered, that the waters of all rivers and brooks, in time of floods, carry off a considerable quantity of clay towards the sea, whilst the sand, by its superior *specific weight*, would sink to the bottom as soon as it arrived at the flats, and form these banks, or level plains, that are found by the sides of most rivers where the fall is not rapid, nor the flood confined by hills to a narrow space.

The proportion which the *good* land, within this county, bears to the *bad*, is very small, not above one fourth part. To the traveller who had just passed through the county

by either of the turnpike roads, the fact, however, would seem to be otherwise.

The main road from London to the counties of Carmarthen, Pembroke, and Cardigan, lies 25 miles by the side of the Hok. Leaving Abergavenny, the traveller enters this county at Llangrannock; and although he will soon perceive a change in the soil for the worse, yet in the foreground, he will find a practice of husbandry in which there is not much to blame, and a soil friendly to vegetation, although not so luxuriant as that which he left behind. For the first eight miles, his view is confined to a narrow spot, by the sudden projection of the rocks on either side; yet it is necessary to remind him, that he has seen *all* that, *as an agriculturist*, he would wish to examine in this quarter of the county. For the next eight miles, to the town of Brecon, the vale is extended to a *comfortable* width on both sides; and the dejected mind is thereby relieved from the sudden check by which the barren rocks on either side had formerly repulsed the inquisitive researches of the wishing eye. The VANN, or Brecknock Beacon, the indisputed sovereign of all the mountains in South Wales, rears his bold, but verdant head, above the mountains that surround him on the right. From Brecon to Deveynock, the tillage part of husbandry is performed much in the same manner as in the lower district; but the remainder of the county, to the confines of Carmarthenshire, afford little to commend, but much to blame. That portion of the vale of Usk to which this county lays claim, must, however, upon the whole, afford a considerable degree of satisfaction to the agriculturist, and must prove highly gratifying to the man of picturesque taste.

If, by the other branch of the turnpike from Hereford, he travels to the town of Brecknock, where he joins the former branch, he will be delighted with a sight (to an agriculturist) still more gratifying.

On entering this county at Hay, he will find a soil superior to that of the former route, for most of the way—the foreground extending a considerable way, in a high state of cultivation; and the barren mountains thrown at such a distance in the back ground, as not to intercept the grateful sensations of the exulting mind.

A third route, but, to an agriculturist, a far less inviting one, is to proceed from Pipton to Builth, by the side of the River Wye; and from thence, by the side of the Irvon, to the confines of Carmarthenshire.

By either of these routes, the traveller would be induced to give a description of the nature of the soil, and present state of agriculture, within this county; which a more minute investigation of the whole would by no means warrant.

Were he, however, to proceed from Talgarth to New Church, on the borders of Carmarthenshire, the *Eppart* hills, he would find his mind agitated by sensations very different from those excited by either of the former routes.

A wide range of barren and uncultivated mountains would, for the most part of the way, chill the philanthrophic breast with dejection, and excite compassion for that portion of its kindred race whose inauspicious fate had destined them to become the tenants of this inhospitable region. The eye is mortified by the humiliating review of a circle of thirty miles in diameter, bounded every where by the horizon junction with mountains *still loftier* than those on which the spectator stands. This extensive space, it is true, is covered with various species of vegetables, which nature had destined to become the tenants of the soil, but which cannot be converted, in any considerable degree, to the use of man; especially in the neglected state in which these extensive mountains have hitherto been permitted to remain. Nature, however,

has not been so sparing of her good gifts as the prospect from this dreary route would seem to indicate.

As in passing by the side of the Usk, the Wye, or the Irvon, by the former routes, the mountainous districts are, in a great measure, hid from the traveller's view; so, on the other hand, in passing along the Eppant hills, the vale of the Usk on the left, and also the inclosed, but less fertile vale, by the side of the Irvon, on the right, are both hid from his view, and the dreary prospect being terminated by barren mountains on the *further* side of each of these vallies; he would be apt to draw a description of this county, which would be equally distant from truth with that of the former.

Extent. Brecknockshire contains about 512,000 acres, which may be divided in the following manner:

		Statute acres.
First.	The good land, which at an average lets from 12s. to 16s. an acre,	128,000
Second.	The middling land, that lets from 4s. to 7s. an acre, —	96,000
Third.	The poor's mountainous land, that lets from 4s. to 7s. an acre,	102,400
Fourth.	The common mountains —	185,600
	Total contents of the county	512,000

DIVISIONS.

THE mode of cultivation on the good soil is conducted in such a manner, as leaves little room for improvement; but where the land is poor by nature, the tillage part of husbandry, especially, is conducted in the very worst mode that can easily be imagined. In order, therefore, to convey to the Honourable Board any idea of the present state of agriculture within this county, it will be requisite to divide it into two districts.

The first division will contain most of the inclosed land in the hundred of Talgarth, and the vale of Usk, as high as Daveynog.

The remainder of the inclosed land in the county may, with a few exceptions however, be comprehended under the second division.

FIRST DIVISION.

The stone that compose the hills within that portion of the district from whence the Usk and its contributary brooks collect their water being mostly of the silicecous genus, (sand) the defects of the soil in the vale of Usk must consist in the want of a requisite quantity of clay. The hundred of Talgarth, however, is composed of a soil different, in some degree, for the following reason; The black mountains, from whose springs this fertile portion of the county is watered, are also of the *stratific heterogeneous class*; but they are composed of alternate strata of *stone* and *clay*. This gives a degree of cohesion to the soil within reach of the Wye's attraction in *this* quarter, in which the vale of Usk is deficient.

Size

Size of Farms. The farms in general rent from £.50 to £.100: Several, however, rent from £.200 to £.300 a year. The purpose to which the land is mostly applied, is the raising of grain. Cattle, sheep, and pigs, however, occupy a considerable portion of the farmer's attention.

Inclosures. The size of the inclosures will (or at least ought) always to depend on the size of the farm. The farmer who holds one hundred acres ought to follow the same rotation of crops with him who holds six hundred; but things are seldom as they ought to be: From three to six acres is the general size of fields on small, and from ten to twenty on large farms.

The fences are made in this district in a manner worthy of imitation in other parts, where brushwood (underwood) can be had, and the land is not of any *uncommon* high value, because they are an *immediate* fence. When a new fence is to be made, any kind of underwood that can be most easily had, are grubbed up with the roots any time from *November* till *March*. These are immediately planted where the new hedge is meant to be made. Four feet is left for the foundation of the bank, the *quicks* being planted in the center. A ditch is then dug on each side of the bank, and the earth thrown up to form this bank for three feet high, when it terminates in a ridge from 15 to 18 inches.

If the quicks can be had five feet in length, there will be two feet above the top of the bank when finished; but as this cannot always be the case, one foot above the top of the bank, will soon make a good fence. The closer the plants are placed, the better: at least, the sooner will the fence be impregnable. The distance between the *circumference* of each plant, however, ought not to be more than six inches. One row will be sufficient of these large plants.

When the field is in wheat, the hedges are then *pleached*: that is, all the dead and superabundant wood is cut off from

from the hedge. The tall branches are *half cut*, but not wholly so, because it is intended, that when they are laid along the stakes, new sprouts may issue from them in this horizontal direction, the sap having still a passage from the parent root, by the half that was left uncut, to invigorate these young sprouts, and then others are found. The hedge on this bank is then a firm, solid, and strong body of *live* wood, of a regular heighth, from 15 to 20 inches, above the top of the bank. Since the hedge undergoes this operation every six or eight years, the country has a neat *husbandman-like* appearance, and banishes from the mind of the spectator those unpleasant sensations of *indolence* and *slovenliness* which the sight of overgrown hedges round small inclosures must ever inspire. The average price of pleaching hedges is one halfpenny a yard. The price of making a new bank and fence, two pence a yard, the farmer grubbing and hawling the quicks.

The hedges are formed of different curves. Scarce ten yards of a straight hedge to be seen together in the county. This adds much to the beauty of the country, and to the inconvenience of the ploughmen. Beauty, however, is not the farmers motive in persevering as they still do in making their hedges crooked. The popular, but erroneous idea, prevails here, that a crooked hedge affords more shelter to the cattle, than a straight one; although one would imagine, that no proposition could be more self-evident, than that the one half of the fence of every field is exposed to the wind, and that the other half is sheltered from it; and that ten thousand turns in a hedge do not afford a greater degree of shelter, than if it had been comprehended under four straight lines, or any other regular figure. This evil, however, is not of sufficient importance to claim any serious animadversion; because, in these superfluous short turns, the cattle in the plough do *no great injury to the land;* and the time lost in turning is not *very* considerable.

Every

Every ploughman here is perfectly master of the *straight line*; for every ridge runs mathematically true.

Cattle. There is, undoubtedly, great room for improvement in the breed of neat cattle in this district. Some attempts have been made to introduce the Herefordshire breed: But these, as might naturally have been expected, have always failed; because the genius of the soil, and of course of the grasses in this county, are much inferior to those of Herefordshire.

A breed more likely to succeed, and which well merits propagation, is the Pembrokeshire. The soil of this district is much the same with the sandy soil of the hundred of *Castlemartin*, the best feeding ground in Pembrokeshire. The superior elevation and distance from the sea, renders *this* district much inferior to *that*, in respect to local situation: But the superior judgment, industry, and good management of the natives, as farmers, and cultivators of the soil, removes, in a considerable degree at least, this natural disadvantage.

The Pembrokeshire breed have not yet however had a fair trial in this county, because, among other reasons, they are found troublesome, by a habit of breaking through fences, that would turn back, or confine the native breed of this district.

The Devonshire breed are still more likely to thrive in it; and, it is to be hoped, will get a fair trial.

Watering of Meadows. The benefit to be derived from the flooding of land, is no where better understood, nor the operation more judiciously performed, than in this district. Nature has been so uncommonly bountiful in this respect, that she has left little more for man to do, than gratefully to accept of her proffered gifts. From the sides of surrounding hills, the water rushes forth in innumerable springs, as if placed there by HIM, who formed the mountains for the husbandman's immediate use.

Round

Round most of this district, the brooks are formed by springs, issuing from the hills, at different degrees of elevation, from 1 to 12 hundred feet above the beds of the two main rivers, excepting therefore, the detached hills, interspersed through the middle of the district, most of it might be watered. But man, born to prey upon man sometimes, steps forth to disappoint the beneficent intention. From the intermixed manner, in which the land is possessed in this county, it very frequently happens, that a man cannot raise water on his own land, but is obliged to obtain lease of his neighbour immediately above him, to bring it through some part of his land. This neighbour is either his *foe*, or his *friend*. If he is his foe, he will not give him leave on *any* condition. And such are the materials of which human nature is composed, that if he is his friend, he will be apt to *calculate*, not the value of the damage done to his land by the water-course proposed, but the *benefit* which his neighbour's land *below him*, will reap from the proposed cut, and make his *charge* accordingly*.

Sand being the prevailing genus of the soil, this land is wonderfully well adapted to receive great benefit from being flooded with *any* water, that is not charged with metallic particles hostile to vegetation.

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* Should it be found, not to encroach on the *sacredness* of our laws, respecting private property, it might be an object, worthy of attention, to enquire how far an act of the legislation, to compel individuals to *rent* such a portion, as upon the view of a jury of six men, under directions of the sheriff of the county, should be requisite to carry the water to the lands below. And in order to prevent any wanton, or unnecessary application to the power of such an act, let double the real value of the land be allowed.

When a brook is the boundary of two estates, let each have a right to make weirs across the brook, and fix them to his neighbours land, if requisite, to raise the water over his own ground, provided however, he does not overflow more than number of yards, paying annually the amount of the damage which he does to his neighbour's estate by such weir.

They generally feed their beeves upon the lattermath grass of their meadows, without sacrificing this grass; therefore, they are prevented from turning the water on the land, so early in autumn as they could wish.

An intelligent farmer observed, that notwithstanding he valued his lattermath crop at 15 shillings an acre, yet he found, that the cheapest manure he could dress his meadows with, was to sacrifice this crop once in 10 or 12 years, by turning on the water in August, or whenever a *flood* happened after a *long drought*.

To catch the first water of a flood after a long drought, is of very great importance, more especially if the water be collected from common hills, or other pasture grounds that are hanging, or side lands where sheep and cattle have depastured for some time; for their dung, as well as the particles of earth, which the heat of the sun had pulverized, are all swept off by the first autumnal floods, and in general lost from the above circumstance.

The features of the country, from the great number of hillocks and swells in which it abounds, renders it in a peculiar degree, adapted to derive every advantage from flooding; because the water moves quickly off, as soon as it deposits the wealth with which it was charged round the roots of the grass.

After they have eat the lattermath grass, they turn the waters on the meadows the first flood, for they always prefer flood to clear water; they suffer the water to run over the ground for two or three days *only*, never longer at one time. At the end of 10 or 12 days, they turn it on again for the same space of time, and so on, till the end of March. Since however, they cannot get floods to happen at stated distances of time, they are obliged to use the water when they can catch it; but if they had their choice, they would not wish to flood oftener, nor for a longer space of time.

Should the frost set in when the water is on the land, so that some spots should be covered with ice for some days, the spot so covered with ice, will be of a *darker green*, and appear more healthy in the spring, than the rest of the field. But when they come to mow the hay, the crop will be *considerably less*, then that on the other parts of the field that were not covered with ice.

Should they neglect to flood their meadows for one season, a loss of from one half to one third of their usual crops would be sustained.

If the land be steep, a smaller quantity of water is suffered to go over it at a time, than the land that is less steep, least the water should wash off or carry along with it, some particles of the loose earth.

They prefer clear water from the spring for their sandy land, but brook or river water for that of clay.

The farmers here, are very sensible of the benefit of having water from the farm yard, turned over their meadows, and they are very careful to have *the field under the house always a meadow*. The good effects, that the droppings from the farm yard and fold have upon this sandy land, is really astonishing.

Although *all* the waters within this district are beneficial in some degree, in the state in which they issue from the springs, even before they have been incorporated with any other substance, yet some of them are more so than others.

The genus of the stone as has been observed, is of the sandy kind, but there is a vein of limestone, that runs through great part of this district.

When the water from the limestone can be had, it is preferable to any other. There is a circumstance, which has in general, been overlooked by farmers, but which well deserves the attention of those who reside in a *flooding* country like this: that the water issuing from *different* springs, are impregnated with *different kinds*

of earth, and therefore, beneficial to the land in very *different proportions*, although all of them may be so in *ſome* degree*.

Rotation of Crops. In the hundred of Talgarth, the following is the systems most generally adopted.

First system. 1st year after clover, lay wheat. 2d year, pease. 3d year barley, and sow clover. 4th year clover,

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* It will not perhaps be foreign to our purpoſe, to throw out a few hints for the conſideration of ſuch farmers, as have not paid attention to this ſubject. This becomes the more requiſite, becauſe moſt of them are apt to aſcribe the ſame properties, and the ſame defects, to all ſpring waters.

It may perhaps be requiſite, to remind the farmer, though not the chemiſt, that there is no ſuch element as pure water, for all water is mixed with particles of earth, ſaline, or metallic ſubſtances. It is the quality of theſe particles, with which the water is thus charged, that gives that of one ſpring, a ſuperiority over thoſe of another; and which alone forms the characteriſtic difference of waters. Theſe particles, will always conſiſt of a portion of that earth or ſtone, over which the water had paſt, while in the bowels of the earth, before it had burſt out in ſprings to the ſurface.

The utmoſt ſtretch of human ingenuity, has not been able to diſtill water ſo pure, but that ſome terrene particles would ſtill remain. Mr. Boyle diſtilled one ounce of common water 200 times, in glaſſes, and obtained 6 drachms of a white light inſipid earth, fixed in fire, and indiſſoluble in water.

It becomes therefore neceſſary, to examine the kind of ſtone, of which the hill from whence the ſpring iſſues, is compoſed. Becauſe, not only the qualities of ſtones differ, but the quantity of one kind of earth, which the water is capable of carrying along with it to the land, is ten times that which it is able to carry of another kind of earth. And let it be held in perpetual remembrance, that the benefit of flooding, will be in the moſt exact proportion, to the quantity and quality of the matter, which the water carries to the land.

There are five kinds of ſimple earths; I ſhall however, call the farmers attention (who muſt be very familiar to them) only to three, *limeſtone*, *clay*, and *ſand*, in order to explain to him, the different proportions in which they are found to be contained in water.

680 ounces of water, may contain 1 ounce of limeſtone; 7700 ounces of water, may contain 1 ounce of clay; 10,000 ounces of water, may contain 1 ounce of ſand.

Such being the proportions, in which three different earths are found ſuſpended in water, it becomes an object worthy of attention to the farmer, to reflect, that the particles from the limeſtone, are not only more congenial to his graſs than either clay or ſand would be, but alſo, that 680 tons of water from a limeſtone rock, would bring as much in quantity as 7700 tons of water from clay, or 10,000 tons of water from a ſandy ſtone rock.

and sometimes 5th year clover. This is the rotation of good farmers.

Second system. 1st wheat. 2d barley. 3d pease. 4th oats, and sow clover. This is the practise of bad farmers.

Third system. When coarse ground, that has long lain neglected, is to be ploughed, they proceed thus.

1st year oats. 2d year a fallow. 3d year wheat. 4th year barley and clover. Let the clover lay one, but sometimes two years. Then proceed again; sow on the clover brush, 1st year wheat. 2d year barley. 3d year pease. Then a fallow for turnips or wheat.

Fourth system. 1st year wheat. 2d year pease. 3d year barley. 4th year pease or oats, then a fallow.

They admit themselves however, that this is bad husbandry; and that taking more than three crops, without laying the land down in grass seeds, is not honest.

Fifth system. The following however, is not uncommon. 1st wheat. 2d pease. 3d barley. 4th oats and rye grass. Eat the rye grass in June, then make a fallow for Michaelmas wheat.

They break up their fresh ground in March, give a cross ploughing in May, a third in June, and lay the land up in small ridges 4 feet wide. They give a fourth ploughing, at the time of sowing the wheat, which is from the end of September, to the middle of October, as the weather will permit, if they give the land a cross harrowing, between each of these ploughings.

The best farmers endeavour to sow their wheat as near as they can to the 29th of September. If they sow earlier, they will have a great deal of straw, but less grain; and if later, the grain will not be the worse, but the straw will be shorter.

They do not like to sow their wheat in dry weather, but wait frequently, for several days longer then they could wish, for rain to moisten the land before they sow. They wish for a dry day to throw the seed into the earth,

and would rather have a day or two of dry weather, after the seed is sown.

They admit, however, that this rule is not infallible, and that on stiff land and clay, they would have better crops, if the land was quite dry when they sowed their wheat seed.

Second crop they plough towards Christmas, and sow pease towards the end of March.

Third crop, 1st ploughing about Christmas; 2d ploughing at the end of February; 3d ploughing at the latter end of April, and sow barley or oats, and clover; let the clover lay two years.

This is the mode of husbandry, which long experience has proved to agree best with this kind of land, which from its sandy nature, is incapable of supporting more than three grain crops in succession. When it has lain two years in clover, plough it up, sow wheat on the clover brush, furrow, and it will bear to be wrought in this manner, to the end of time; and yield three crops of grain, and two of clover, between each fallowing and dressing.

They find, that they have a better crop of barley, after taking a crop of pease between the wheat and the barley, than if they had sown the barley immediately after the wheat.

But even in this district, things are not always managed as one could wish. For although the above rotation, and number of crops, are universally allowed to be the only fair and honest method of dealing with the land, yet there are those, who over-burden their lands like their cattle, with a heavier load, than either of them can bear. Repentance, however, is the never failing lot of him, who knowingly deviates from the straight line of rectitude, in whatever concerns either himself or others: Since a man's interest stands in a predicament, somewhat similar to his morals, for both are often materially injured,

injured, by sacrificing a certain advantage at a distance, to a trifling gain, that happens to be at hand.

They do not find, that the oats thrive so well on their best bottom lands, as they do upon the moory upper lands, because their best land being of a sandy nature, the oats from the heat, will ripen before they have time to fill, as they ripen in the valleys a month sooner than on the hills.

Rotation of Crops. The vale of Uſk, the general practice is as follows. 1 year fallow. 2, wheat. 3, pease or barley. 4, oats. 5, turnips. 6, barley and clover. Let the clover lie two years, and the ninth year, a cross of wheat and clover brush.

This is the common system, along the vale of Uſk. But a gentleman of superior discernment, whom nature had endowed with a mind too capacious, and with a turn of thinking too masculine to submit to the cramping fetters of any custom, which reason and *facts* did not justify, has happily broke through the magic spell, which had long held many of the farmers in this district in bondage. The following is the invariable rotation of crops which he takes.

First year, a fallow and sow turnips. 2, barley and clover. 3, clover. 4, wheat on clover brush, of one year's standing. 5, pease or oats. 6, fallow again, and sow turnips.

He lays 22 bushels of lime on an acre of clover lay, ploughs it down, sows the wheat broad cast on the top of the furrow, and harrows it in. Never suffers the clover to stand more than one year, lest the land should get foul.

In order to judge of the propriety of this excellent system, it is requisite to bear it in remembrance, that all the land here is of a light sandy nature, and contains by far, too small a proportion of clay. Hence, the plough

can

can scarcely be used too sparingly, nor the roller too much.

Here are no summer fallows. To what purpose, should there be any, since they are found to be not only useless, but hurtful on such a soil? The object in view, being to repel, not to admit the scorching sun beams of summer.

The Quantity of Seed. To a statute acre of wheat, from 14 to 15 gallons, if sown early; but if late, they allow more for the crows, who in the more early season, have plenty on the stubble. If the seed is sown early, every blade will come up, but not so if late sown.

Barley from 25 to 30 gallons per acre.

Oats from 24 to 29 ditto.

Large grey pease 27 to 30 ditto.

White pease 22 to 23 ditto.

Clungy pease 21 to 22 ditto.

Clover seed, if the land is meant to lay two years, or for seed, 10 pound per acre; if for one year, only 8 pound, and 2 gallons of rye grass.

Manure. Lime is the only manure used in this district, except the production of the farm vegetables, all pulverized earth. They lay on the fallows from 520 to 600 gallons of lime, a statute acre. This is the quantity found to answer best, but stingy lazy farmers, lay on about one half of this quantity only. They carry one load of lime a day, to most part of this district. The good farmers make compost, and are well acquainted with the advantage of collecting, and mixing all the pulverised earth they can gather on the roads and lanes, to augment the mixing. Fern and other green vegetables, are frequently thrown into the hollow wet part of the bye roads, to rot during winter.

Stock. They are much inclined to work with oxen, in preference to horses; but their great distance from lime and coal compels them to keep one horse team at least

upon each farm. The general rule is, to have one third of the number of teams of horses, and the other two third oxen. The small farmer, however, who has only one team, must have that a horse one. They work their oxen yoked; and the parochial roads especially are so narrow, and cut up by the waggon wheels always traversing the same tract, that no road work can be done by yoke cattle.

Seed Time, and Harvest. They wish in general to finish sowing by the end of April; and in most years they begin harvest the first week in harvest.

Common Fields. There are no common fields in this district, except a few spots in the neighbourhood of Talgarth.

Labourers Wages. For some years past, labourers wages have been a shilling a day for men, and six-pence for women, finding their own diet. But last year the wages of the men were raised to seven shillings a week. The time of labour, from six to six in summer, and from light till dark in winter. Half an hour allowed for breakfast, and an hour before dinner. Ploughman's wages in the year, living in his master's house, from £7. to £9.

Most of the work, however, is done by persons hired either by the day or by the year.

Drains. From the uneveness of the face of this country, the stony or gravelly nature of the subsoil, and the general prevalency of sand in the superficial soil, there is not any considerable quantity of land in this district oppressed by a superabundance of water. Some spots, however, there are, that, from their clayey nature, have such an inclination to retain the water, that, in some places, under drains have become requisite; and the work is in few corners of the kingdom more judiciously performed than here. The making of these drains forms a profession by itself;

itself; and much room there is left for the exertion of penetration and judgment, in cutting the drains in such a direction as to do most execution, by catching the greatest number possible of springs.

The breadth of the drain at the bottom is eight inches, and as narrow as they can keep it at the top—generally less than eight inches. The depth, from two and an half to three feet, as the raise of the hillocks, or other uneveness of the ground, requires. They fill them in within three inches of the top with stones—cover these with a thin layer of straw, fern, or rush, and throw back the earth. The stones will in a short time sink three inches; which, with the three inches before mentioned, puts the stones six inches below the surface of the ground. This will always be sufficient, because they never plough more than four inches deep.

The price of making these drains, is a penny a yard, the landholder finding the stones and straw. The farmer generally allows some drink; and he ought to be present at the filling and covering of the drains, because the smallest neglect in that part of the operation may ruin the whole.

The drains ought to remain for some time open.

Wood Lands. These, of all other things, do the most discredit to this district. They are kept under no system whatever, nor is there the smallest attention paid to the preservation of them, either by landlord or tenant. Such trees as have escaped the general havock, by being out of harm's way, and arrive at timber, are then owned by the landlord, because they will fetch money. But by what fortunate circumstance they have escaped the brousing of cattle, the cottager's axe, or the hedger's bilhook—how, in defiance of such a host of foes, they have arrived at maturity—or how others are to get up in their place

when they are cut down, are circumstances which, I believe, seldom occupy much attention.

It is true, in all leases there is a clause—that the tenant shall not cut, lop, or top any timber trees, or trees likely to become so; nor suffer any other person to do so, &c. All this looks very pretty in theory—But, behold the practice!

By the custom of the country, the tenant may cut what underwood he wants for hedge boot and fire boot. But if he had a hundred acres more than he wants for those purposes, he cannot sell any from the farm. He will, therefore, scarcely raise a crop of young wood for his landlord's use, especially since he pays him rent already for the very land on which such wood must grow. The consequence is obvious: Since the landlord will not suffer the tenant to sell the underwood, nor turn it in any manner to his own advantage, he will generally take care, that the landlord shall not reap much benefit from this rigid exertion of his prerogative. The tenant, in fact, with some degree of reason, considers all the timber, and other woods growing on the land, for which he pays rent and taxes, as intruding upon his right; and being always in the way, they will frequently feel the marks of his resentment. But give the tenant an interest in the wood, matters will be wonderfully changed in their favor. They will then be considered as a most valuable appendage to the farm; and growing as they do of their own accord, without any trouble or expence to him, they would soon become favorites.

In order to render the county of Brecknock one of the most beautiful and best wooded parts of this island, all that is requisite is, to let nature have her own way, and refrain from doing mischief to the young plants.

It would, therefore, be an easy matter to prevail on the farmer to be idle, when he was once assured of making money by his inactivity, by granting him the liberty of turning

turning the wood to his own advantage, under certain restrictions; and making him a partner with the landlord, in some proportion, in the advantage to be derived from the growth of such young saplings as might have originally risen on his lands during the continuance of his lease. Should the wood lands of this country be ever placed on any footing likely to protect them from those horrible and systematical depredations to which they have hitherto been subjected, it must be in consequence of the operation of some plan similar to that which has been just hinted at.

The gentlemen of the law may restrict tenants, by writing covenants in leases to that effect. But giving the tenant some proportion of interest in the woods, and encouraging him to protect them, will have a far better effect than all the threatening language which lawyers can use against him to deter him from destroying it.

In order to encourage the growth of young timber, nothing is more requisite here, than just to inclose any spot of land. The oak and the ash, will rise of their own accord. What renders the neglect of protecting the young timber in this county the more galling is, that the Welch oak, on account of its lower growth, is preferable to the English; a circumstance not generally known, but which is easily demonstrable from a superior specific weight.

Provisions. The price of provisions are considered high, when wheat is at 1*s.* a gallon.

Barley at	—	7*d.*	a gallon.
Oats, when at	—	4*d.*	ditto.
Pease, when at	—	7*d.*	ditto.
Beef, when at	—	4*d.*	pound.
Mutton at	—	4½*d.*	ditto.
Veal at	—	4½*d.*	ditto.

The price is considered low, when

Wheat is at	—	7*d.*	a gallon.

Barley at	—	4*d*.	a gallon
Oats at	——	2½*d*.	ditto.
Pease at	—	4*d*.	ditto.
Beef at	—	1½*d*.	pound.
Mutton at	—	2*d*.	ditto.
Veal	——	2*d*.	ditto.

There is seldom much variation in the prices of poultry, which are as follow. Pullets 6ᵈ. Ducks 7ᵈ. Geese 1ˢ. 6ᵈ. Turkies 2ˢ. 0ᵈ.

The prices of the respective articles above mentioned, have been both higher and lower, than those herein mentioned. What turn the price will next take, it is hazardous to say.

Turnpike Roads. About 30 years ago, the gentlemen of this county, opened a subscription among themselves, for defraying the expence of widening and repairing the main road, which is the thorough-fare from the counties of Pembroke, Cardigan, and Carmarthen, as well as a great part of this district to London. The funds arising from this mode of proceeding, proving to be insufficient, they were under the necessity of soliciting the aid of parliament, in order to enable them to borrow money, and set up gates for collecting a sum sufficient to pay the interest of this money. This I think was the first turnpike gate set up in South Wales. The bulk of the people became clamorous, and considered themselves almost ruined, by the imposition of a tax unknown to their fore-fathers. The gentlemen, however, persevered with a steady conduct, and a determined resolution of doing good to the people in spite of themselves; and they soon met with that submission, which the bulk of mankind are always ready to yield to legitimate power, when exercised under the rigid government of unsullied justice.

The people, however, found to their great surprise, that independent of other advantages which they derived

from the turnpike road, that the inhabitants of the other three counties, who had hitherto travelled free through this, now left with pleasure at the different gates, more money annually, than paid the interest of the whole sum laid out in making the road. It has at last turned out, that the landed property of the county at large, has been advanced one third at least in value, by the success of innovation, which the people had not only opposed with all their power, as being pregnant with the most mischievous consequences; and which was submitted to at last only in consequence of its having been supported by all the heads of their most ancient and respectable families.

There was a misfortune attending the original making of the turnpike roads throughout the whole kingdom: And this county has felt, and still continues to feel, its share of the universal calamity. Wheel carriages were not then so common as they are at present: hence the advantage of level roads were but faintly seen. The gentlemen, therefore, unfortunately did not go to the root of the evil; for, except where the hills were very steep, they contented themselves with widening the old road. This was the case of almost all the kingdom. When the land was originally inclosed, the top of the hills being less fertile than the bottom, the road was generally pushed there by the land-owners: And their descendants, at this day, feel, and are long likely to feel, the sad effects of this puny parsimony.

The present trustees, however, are very sensible of the improper direction of the turnpike roads in general through this county; and by a patriotic exertion, worthy of imitation, are now busy in making new roads round the bottoms of those hills which their less considering predecessors had boldly climbed over.

The road lately made from Bwlch to Lime and Coal, through Llangunider, ascends from the river Usk to the summit

summit of the south district of mountains, in a space not exceeding two miles.

Luckily for the public, this road was wholly left to be laid out by the surveyor of the trust, Mr. Church, without yielding, as is done in most cases of this nature, to the whim and caprice of the land-owners; or, what is much worse, to that of their tenants. This was the most difficult district of road ever attempted in any part of South Wales; and in the hands of any man not possessed of the most profound abilities, could not have been accomplished. An elevation of 300 yards, nearly, is obtained in the space of 4000 yards only.

Notwithstanding the immense heighth for a turnpike road, the elevation is so judiciously directed, that the ascent is never more than one-thirteenth, or one yard in thirteen. A brook crosses the road, which, to a judgment less penetrating, would have proved a stumbling block; but this Mr. Church has turned to advantage, by creeping slowly up the side of it before crossing; adhering inviolably to that judicious rule of never yielding an inch of that elevation which he had once obtained, whatever direction his adhering to such a rule might give the road. This, among other instances, that might be produced, is a convincing proof, that the present improper direction of the turnpike roads within this county ought not to be imputed to the present trustees, nor to the artist, to whom they have so deservedly trusted the management of them.

SECOND DIVISION.

The second division includes the hundred of Builth—including the other mountainous districts of the county.

Soil. The nature of the soil will be best explained by an examination of the genus of the stone that compose

the mountains of this district, which are of the *homogeneous stratified class.*

The stone consists almost, wholly of a brittle blue slate, called here *Rab.* It does not strike fire with steel. It is so soft, that it may be scratched with the nail of the finger. Its *lamina* is so thin, and the power of cohesion, that unites the thin slices in which it is found, is so feeble, that, on being exposed to the air, it rents, cracks, and falls into small pieces. It is a species of the *argillaceous genus*; and when powdered, and mixed with water, turns into clay.

The soil of the *low lands*, and valleys, is, therefore, composed of a weak loose earth, of the *argillaceous genus.* When water is permitted to stand on this soil, it becomes a deadly poison to all *useful* vegetables. The weak *slaty* particles of which it is composed, consisting mostly of clay, is, by the long continued presence of water, turned into a moist substance. Its clayey nature makes it part with water with great reluctance.

This soil is not hostile to vegetation when in a dry state: but even then, it is of a soft loose nature, and wants what the farmers call *a staple.* When newly ploughed up, and pressed by the foot, it gives *too little resistance.*

This soil is not endued with the qualities of attracting from the atmosphere the nutriment of plants; but a very small proportion of lime gives it that power in a very uncommon degree. Lime gives it, besides, a degree of cohesion in which it is naturally deficient.

State of Farming. That high degree of approbation with which, in conformity to the most rigid adherence to truth, I have had the pleasure of mentioning the industry and good husbandry of the first division of this county, must be considerably abated, when I enter upon the less inviting task of reporting the rural management of the second.

Ascending

Ascending from Hay to Builth, by the side of the Wye, a distance of 20 miles, the valley, for the last half of the way, is very narrow; but, upon the arrival at Builth, it spreads so wide as to afford some relief to the agriculturist; who might be apt to murmur at the apparent stinginess of nature, in pressing the rocks so close upon the river for such an extent.

For two or three miles round the town of Builth, the tillage part of husbandry is performed in such a manner, as to rescue the farmer from any severe degree of censure. This, for the practice of the *hundred of Talgarth*, hath crept slowly up along the side of the Wye; but further towards the mountainous part of the county, it has not yet found its way.

Size of the Farms. The farms are, in general, very small. There are not, in the whole district, ten farms, that rent for more than one hundred pounds a year. Bordering on the commons, there are a great number of small holdings from five to ten pounds a year; but the general run of farms is from twenty to forty pounds. The price per acre of the best farms may be from six to seven shillings; but the poorer land is let from about three to four. There is one whole parish let for only two shillings a statute acre. It is found, in *general*, that the lower the land is let, the tenant will be the poorer, and the cultivation of the farm more neglected, than if the rent had been higher. This will be, in some degree, accounted for, when we come to speak of the *commons*.

Mode of Occupation. The land is mostly employed in pasture. Although the county is thinly inhabited, they do not raise grain sufficient to support themselves, but are supplied from the first division of the county. For the payment of their rents and taxes, they depend wholly upon their dairy and stock. About a fourth part of the inclosed land, only, is employed in the raising of corn.

Great

Great part of the land is in the original state in which nature formed it, and has never been ploughed, from the following, among other, causes: There are large tracts of land here called *Rhoses*, almost, useless to the farmers. Innumerable springs ooze from the sides of surrounding hills and mountains. Where the descent is not very rapid, nor the quantity of water issuing from the spring so considerable as to form a rill, it soaks the earth for some distance, until it is again imbibed by the soil. This moisture encourages the growth of *rushes*, and other course *aquatics*. Since the cattle will not eat these, they are suffered to decay on the spot where they grew. The earth of these *decayed vegetables* have, in time, formed a kind of spungy soil, of a Turbary nature, for a few inches deep; below which is a cold hungry blue clay. This soft Turbary serves the *double pernicious purpose* of preventing the departure of the water, and that of locking up the soil beneath it, from the benign influence of the atmosphere. The small pittance of coarse hay which these wet lands produce, are annually mowed, and given to the cattle in *winter;* for, in summer, they will not eat it. This alone is an insurmountable objection to the introduction of any other kind of cattle, except the small *hardy natives;* at least, until these lands are first rescued from the hand of their *mortal enemy*, *water;* which is no less fatal to this species of clayey land, than it would have been beneficial to a sandy soil. Another portion of land prevented from being used in tillage, is the sides of steep hillocks, or banks of brooks. These are mostly occupied by timber or brushwood; and when the timber hath been cut, the roots still remain, and prevent the entrance of the plough. Some of their best land is thus left to nourish birch, thorns, and other trash; for no care is taken to keep the woods from cattle after the timber has been once *cut*. The land is, therefore, rendered, in a great measure, useless for ages.

Tillage. To clear such kind of land *from timber* has been formerly considered of so much advantage to the *freehold* in this district, that the tenant who holds a farm at *will*, considers himself intitled, *at this day*, to take *as many timber trees as he pleases*, if he takes the *roots along with them;* and thereby prepares the land for tillage. The *dry part* of all the low lands in this country, *seem* to have been *at some distant period* covered with timber, and the inhabitants forced to raise their corn on the hills. This accounts, in some degree, for the right which the tenant *conceives* himself to have to all timber growing on the land which *he clears.*

When a field is in tillage, the *dry spots only* are ploughed. The parts of the field that *are to be ploughed*, is most exactly *ascertained* by that ancient distinguisher of good land, the *mole*, (wunt) who is well known to avoid all *wet land*, on which he never trespasses: And the farmer *hero* suffers the water to keep possession of his *ancient freehold* with a kind of superstitious, and, seemingly, conscious reverence.

Stock. In the low lands, horses, horned cattle, and pigs, are the stock; but sheep is the principal dependance of the hilly farmers adjoining the commons. The profits arising from the sheep upon these extensive commons enables the farmers to live without paying *scarcely* any attention to the improvement of his farm. In general, he sends for most of his corn to the next market town.

There are a number of gentlemen *sheep farmers* in this district; and most of the money made by farmers has been by sheep. The quantity kept will depend upon the farmers capital in money to stock the hills. From one to five thousand by the great, and from one to five hundred by the small farmer.

Cattle. One of the *few good farmers* in this district, and whose land is dry, has lately tried the Pembrokeshire breed of cattle; and he has found them to answer very well.

well. One of the many *bad* farmers has tried the same breed, and they have failed. This confirms what will naturally occur to every intelligent farmer—that the *improvement of the land*, and *practice of husbandry*, ought to take place before any new breed of cattle should be triçd in *our hilly district* especially.

Clover. Good, and even tolerable farmers, sow clover seed: The bad sow no grass seed whatever.

Meadows. Watering of land, is little practised in this district. In dry land, it is found to be of advantage, but not to that extent that it is in the other parts of the county, from the cold clayey nature of the soil. The softness of the stone that compose the hills here, has permitted the brooks and rivers to make such *deep beds for themselves*, that it is not possible to raise them, in the length *of one farm*, so high as to lay any *considerable* extent of ground under water: And there is seldom any springs in *this kind of stone* that afford any considerable quantity of water, from its clayey nature. The water rather *oozes* than *springs* out of these hills composed of this *soft rab.*

Crops. In the low countries, the grains are, wheat, barley, rye, and pease. In the hilly parts, oats is the principal grain, with a little barley and rye.

In the hilly parts, they carry the muck to the land that has lain for some years in grass, at different times, from the beginning of October to the end of February; but the *sooner* they lay it on the land, *the better.* They plough in February and March, and sow in April and May. The 1st, 2d, 3d, 4th, 5th, and sometimes the 6th and 7th crops, *are all oats.* When the land will not *yield the seed*, they leave it in that state for *several years* to *recover itself*, and break up *fresh land.* It must, at first view, excite some degree of astonishment, that a class of men, endued by nature with a *keenness of penetration*, and a *solidity of judgment*, which may be *equalled*, but which has not been *surpassed*, by any of their fellow subjects in this

island, should, from *father* to *son*, persevere so *stubbornly* in a practice so *destructive to themselves*. They all insist, that no *other mode of husbandry* would agree with *their* land; and that their *fathers did so* before them. These, however, are only the *avowed* reasons: The *real truth* is, that when the land has once been broke up, it is more *easy ploughed* than fresh land would be; and they are, from the habit of *idleness*, very averse to *labour*. Their cattle are also small, and in the spring especially, *after a whole winter's starvation*, they are very weak; for they never think of ploughing in winter. Two little ponies, and two cows often *in calf*, compose the team. This *horrible practice*, however, is most prevalent on the verge of *extensive commons*, or where *a great deal of land is let for little money*.

To argue with them, however, on this subject, is but to little purpose. Few are aware of the difficulties which they have to encounter, when they enter the list to combat *national errors* by the *sedate* weapons of temperate reason; nor of the *insurmountable obstacles* that oppose them, when they attempt to root up, from the human mind, absurdities, originally engrafted upon ignorance, but which, in the progress of ages, have acquired a degree of maturity and strength, that renders them too stubborn to yield to the meek voice of *common sense*. The *good man* will be slow to scout them with that severity which truth would dictate, because he *inherits* them, like his *territorial possessions*, from his *fathers*. "They grew with his growth, and strengthened with his strength." The indolent man, whose insipid mind is too *feeble* to wield the *masculine* weapons of reason, will not oppose them, because that would be *too much trouble*.

Their making oats their *principal* grain is highly commendable. Their taking such a *great number* of crops *successively* from the *same* land *only*, is reprehensible. The oats raised upon these mountainous lands, are preferable

ferable to those raised on the rich lands. They ripen *too fast* on the good—six weeks sooner than on the poor land. Hence the rind is thicker, but the corn less and softer, than on the hilly ground.

They sow about the end of April; and harvest is seldom over before the middle of October.

There are no common fields in this district.

The size of fields are, on small farms, from three to four acres; and on large ones, from eight to ten.

Fences. Good, and even tolerable farmers, have quick fences of thorn, hasle, birch, or whatever they have on their lands, made in the same manner as those in the low parts of the county. *Bad* farmers make dead fences, by splitting oak trees for stakes, placing them at the distance of three or four feet from each other. Wattlings and boughs of trees are wrought along these stakes in a basket form, and the field is thus protected while the *corn is on the ground.* When the land can bear *no more grain*, this fence is taken down and *burned*, and a fresh one made, *by cutting down other oak trees for stakes*, and other wattlings.

However, since oak timber has become of *some value* here, such an *unnecessary* destruction to the landlord's timber, and such a waste of the *tenant's labour*, begin to be discountenanced by such landlords as pay a *tolerable* degree of attention to their own interest. The oak destroyed for this purpose, is often worth more than three years rent of the field thus inclosed.

When underwood is near little more than double the expence of *labour*, requisite to make these temporary fences, would be sufficient to make a bank and quick fence that would last for ages. Thorn, hasle, ash, and oak, will thrive in their best land; sallys, in the wet land; and the hardy birch, and mountain ash, will do well in the poorer soil. Quick fences become the more requisite in *this* climate, where *shelter* is wanted as much as *protection.*

It is, however, hard to break through *an old custom* that has been consecrated by time, especially when the *saving* made by *adhering* to such a custom, is *near*, and that to be obtained by a breach of it, *is distant*; more especially, when the calls of the *present moment*, are so urgent as to supersede all consideration respecting the *future*. This is in general the case *here*, where the holdings are small, the soil ungrateful, and the tenants poor.

There is a custom just begun here which bids fair to remedy this evil. The price of making the quick fence and bank, is one shilling a perch, (seven yards). One half of this is paid by the landlord; the other by the tenant, who is bound to take care of the quicks thus planted, and leave them in good order at the expiration of his lease. This mode of *encouraging* rather than *binding* the tenant, is dictated by justice, and sound policy, on the part of the landlord; for the tenant having *apparently the whole* benefit of the fence, will exert himself, in order to have his fields commodiously laid out, since he pays only *half the expence*.

Quick fences are of great advantage in this cold bleak country, from the shelter which they offer to the live stock, as well as to the vegetable tribe.

The old custom was, that the tenant might plant quicks, or do without them, at his own option. Indeed, the old rent of two or three shillings an acre, did not enable the landlord to appropriate any part of this rent to building or making fences. Hence the tenants maintained their respective buildings, *such as they were*, at their own expence, the landlord allowing them rough timber, *if he had any*. Since many farmers held their lands *at will*, the state of the buildings may *easily be conceived*: In order, therefore, to remedy this evil, a very laudable custom is lately attempted to be introduced.

The tenant carts the materials, and furnishes the workmen with victuals and drink, while they are em-

ployed in making new buildings, or repairing the old. The landlord pays them their wages. This pleases the tenant, because he advances *no money*.

Waste Lands. One half of this district, containing in the whole five hundred and twelve thousand acres, is waste lands. The principal stock kept upon these extensive mountains, is sheep; some horned cattle and horses are also depastured there in summer, but the number is not considerable, because the farmers, by neglecting the cultivation of their inclosed land, have not sufficient keep for them in winter. In many places, therefore, the commons are sufficient to keep in summer three times more stock than the parishioners can send there.

Whoever will examine the state of agriculture in the vicinity of all the extensive mountainous commons in this island, will hazard little in risquing it as a *general* remark, that the cultivation of the enclosed lands are neglected in a very *uncommon* degree, and that a national loss, to a very considerable amount, is annually sustained by the public, in consequence of such neglect. It is not difficult to account for this, when it is remembered, that few like to *labour hard* who can afford to be *idle*.

Here the farmer possesses a *large* tract of land for *little* rent; and these extensive commons, which, as an appendage to his farm, he enjoys *gratis*, furnishes so wide a range for his flocks, that, upon the profits of *these alone*, he can subsist, without the *drudgery* of that hard labour, to which the cultivation of his farm would unavoidably subject him.

Consonant to the inviolable principles of human nature, was the remark of the *inspired writer*, when he informs us, that it was inflicted on man *as a curse*, "That he should earn his bread by the *sweat of his brow*:" For few will be inclined to submit to *this curse*, who can provide for the *demands of nature*, by any employment *less* painful. Necessity at first drove man to dig the *earth*; and when that *necessity ceases to exist*, he will always be found

found ready to desist the performance of *an office*, which he never embraced *through choice*.

Waste lands in the vicinity of large towns, or in the middle of a wild cultivated country, if they be not of *any considerable extent*, may be useful in their present state. The poor may derive some benefit from them, without depriving the community *altogether* of their labour: But, in this country, where the commons extend eight or ten miles in a straight line, and the narrow valleys that surround them being thinly inhabited, they become, in a peculiar degree, *hurtful to society*, by holding forth a temptation to idleness, that *fell* parent to vice and immorality.

That these commons furnish pasture for a great number of sheep and young cattle, is certainly true: But whether that advantage be not in a considerable degree, *if not wholly*, overbalanced, by that loss which the nation sustains in being deprived of the labour of that vast number of people to whom these commons offered the *means* of wasting their time in *idleness*, becomes, at least, a *question*: But idleness is an *improper term*, since nature has implanted a principle of *action* upon every *animated* being, as much as *rest* is a principle of *inanimate* matter. Every member of the community, who is not employed in the performance of some useful or good action, is generally busy in the accomplishment of some destructive or wicked deed. That immense loss which many of the honest part of the community have, in the vicinity of these commons, sustained, from the depredations of that numerous gang of *sheep-stealers* that infest these hills, are too notorious to be questioned; and they justify the truth of this remark.

Excepting those who reside *in the vicinity of large commons*, the inhabitants of this county are remarked for their honesty, sobriety, and peaceable demeanor.

The brooks or rivers that run through these commons, form beautiful narrow vallies. The banks of these are inclosed,

inclosed, and laid out in little holdings, from 5*£*. to 20*£*. a year. The inclosed land may extend from 20 to 100 acres. The *inclosed land*, however, is but a *second consideration* with the tenant, since he will scarcely take the trouble to keep up the fence between it and the common. He will, however, plough up, in the spring, a few spots of the *dry part of a field:* the wet part he leaves in the same state in which it has lain for a thousand years. All the improvement that has been introduced during *that* period, seems to be, that, in the *eighth century*, the muck was carried to the land, in two baskets, on the back of horses. It is now placed in a basket, and drawn, by the horse, on a *sledge*. The tenant avails himself of the *same machine*, to draw home his corn and hay. From the hills, on both sides of his farm, the water oozes out, and falling down, destroys his best land; but such is the wonderful effect of *habitual idleness*, that he will not take the trouble to draw even a furrow with the *plough to direct* its course, by the side of the field; the reason is obvious, he can live upon the profit of his stock that depasture upon the commons. His farm is, therefore, totally neglected.

From the *notoriety* of these facts, it will readily occur, that it will ever be found sound policy in the government of *every State*, to give discountenance to every measure that tends, *even in the smallest degree*, to put it in the power of the people to live *idle*. While the State pursues this plan, it is not possible for it to act wrong, since it only follows the great line chalked out by *nature;* for nature has erected so many *real* wants, that *her* intention *seems* to have been, that man should employ one half of his time in providing for these *wants;* and in order that he might be always out of the reach of those temptations to which idleness *invariably* leads, matters are so *wonderfully* contrived, that, for most part of the other half, his eyes are closed in *sleep*. Hence the whole period of life *seems* intended for action; and at such time as *actions* cannot be

performed, a kind of *temporary* non-existence takes place, by sleep.

In order, therefore, to excite a spirit of improvement among the people, the *first step* seems to be, to put it as *much as possible out of their power to live idle;* and the *second*, to put it in *their power* to exert themselves in a way that will be beneficial to themselves; which, in the end, must prove advantageous to the community at large. Nothing *seems* so likely to accomplish *both* those ends, in *this corner of the land*, as a general division of all *extensive* districts of commons.

Supposing that only one third of these commons could be cultivated to raise grain, one acre would, when so employed, produce more food for society, than ten do in their present state. Independent of this addition to the general mass of national wealth, such poor people as are now starving, for want of work, in many sequestred corners of the kingdom, would then, if they were inclined to be industrious and useful, find employment in the cultivation of the commons; and the worthless and profligate, deprived of the means of subsisting in idleness and sloth, as they do at present, in the vicinity of these commons, might, in time, become useful members of *that community* to which they have hitherto been a post and a burden.

Although tillage be not *the principal* purpose to which these commons ought to be applied, if enclosed, yet there are several tracts by the sides of the brooks and *gentle* hillocks, that might be so employed.

The steep and rocky sides of mountains may be planted to great advantage. The soil is so congenial, *when dry*, to the growth of timber, that nothing is more requisite, than just to enclose the ground, and protect it from the cattle. The plants will rise of their own accord. Most of the rocky part in which the cattle could not come to destroy the young sprouts, are now covered with trees of various

various kinds; but the oats is the great favorite of this soil.

The remainder of this land ought to be used in the depasturing of sheep and cattle, as at present. Great part of these mountains, in their present state, are not only *useless*, but *hurtful*, to the sheep especially, on account of the waters being suffered to take *their own* course down the sides of these mountains, and destroy such immense tracts of land. This never can be removed while these commons remain in their *present state*. But were they inclosed, the water would be diverted into channels that would relieve the ground from the fatal ravages of this enemy.

From the great extent of the commons, and from the narrowness of the cultivated valleys that surround them, I do not think that any method could be devised to correct the present *mode of commonage*.

Labourers. Scarce any labourers are employed in the hilly parts, as scarce any work is done, except by the tenant, his wife, and children. The rate of wages, and the time of working, in the lower parts, is much the same as the rest of the county.

Drains. No drains whatever, are made, although there is scarce a part of the kingdom where they are so much wanted—where they could more easily be made—or where they would be more beneficial. So totally blind are the people to their own interest, that scarcely any ditches are made round their *wet fields*.

Paring and Burning. This mode of improvement is sometimes practised, but although they have a good crop or two, the land is left useless for several years after.

Woods. The country is tolerably well wooded, notwithstanding the great quantity that has lately been felled. The wood-lands are kept under no system whatever, yet, in defiance of all difficulties, some young plants escape the general destruction made by the brousing of the cattle. Every spot into which the *plough*, the *cattle*, or the water,

has not found admission, is covered with some kind of wood, except the high hills.

Provisions. The price of grain is always *higher* here than in the other parts of the county. Butchers' meat and poultry are *considerably lower.* The price, from the sudden stop to the circulation of *paper money*, is likely to continue falling, as it has *rapidly done* within the last six months. In which short period, the value of the landed property has sunk one fourth part in this place.

Roads. The state of the roads, both public and parochial, is the worst that can be conceived in a hilly country where the roads are in general *sound*, because there are few travellers.

The stone of this country is of the worst kind that can well be conceived for laying on roads. The heat of the sun makes it crack, and its clayey nature makes it admit the rain through these cavities, which soon turns it into a clay. The people, however, are contented with these *bad roads*, because they are *almost* wholly excused from the performance of the statute labour. The *farce* of *appointing surveyors* in the respective parishes, however, is *annually kept up.* The want of *residing* magisrates in this extensive district, to enforce this and other parts of the duty annexed to that office, is no where in the kingdom so severely felt as here. On entering Builth, *the little capital of this district*, the traveller, however, to his astonishment, is put in mind by the *gate-keeper*, that he has been travelling on a *turnpike.* He will naturally conclude that very few of the trustees reside in this part of the county.

Farm Houses. The farm houses are in a very poor state in general, the hardy race that inhabit them, however, feel no inconvenience from that circumstance; no regard whatever, has been paid to the situation, so as to avail themselves of the droppings from the farm yard being turned

turned upon the land below, so carefully observed in the other parts of this county.

Leases. No clauses are put in leases here, but the usual one, except on some of the best farms in the lower parts; the landlord allows some money for lime the first three years, and the tenant is bound to lay on an equal quantity the last three years. The first lime laid upon the land here, has been within the memory of the present inhabitants. This allowance seems to have been made by the landlord, with a view to encourage the introduction of that manure. The few who do lime in this district, have a deal of merit in so doing, since they carry it about 30 miles along mountains and bad roads. The coal at is an equal distance, but, excepting the town of Builth, little of this fuel is used, for they have either wood or turbary in most places in great plenty. Some navigable canals now in agitation to be made in the adjoining districts, may soon relieve them from the disadvantage which at present they labour under, on account of their distance from these useful commodities.

Commerce. There is neither commerce nor manufactories carried on in this place. Its inland situation (50 miles from the sea) hindered any attempt to introduce the former; but, excepting the distance from coal, it is remarkably well calculated for the latter, especially in the woollen line.

Immense quantities of sheep depasture on the mountains, whose fleece pay the rents. The average price one shilling a pound, the weight about a pound and a quarter each fleece.

Manufactories. The only branch of manufactory carried on in this place, is the working of stockings. These are sold at the markets around for eight pence a pair. A woman, with very close application, may *card*, *spin*, and *knit*, four pair of these in a week, one pair of those stockings weighs near half a pound, which, at ten pence a pound

pound, is five pence out of the eight pence; some pairs, however, weigh only seven ounces, but as there is a pennyworth of oil requisite for every pound of wool, we may fairly state the raw materials of each pair of stockings, to be worth five pence; hence the woman has only three pence for carding, spinning, and kitting a pair of these stockings, or one shilling a week. Hence the woman has to support herself in food, raiment, fuel, and house rent, for seven days upon this shilling; yet, at some times of the year, it will buy her only one *gallon of wheat*. Such is the employment, and such the only means of subsistence within the reach of the poorer sort of females over all this extensive district, although these are as remarkable for industry, as the males are for an aversion to labour. What a pity that this spirit of industry could not be directed to some channel, more beneficial to themselves, and the community at large, than this pitiful and ill-judged employment. In all mountainous districts, such as that under review, where the soil does not hold forth much temptation to the husbandman's industry, it is apt to be *wholly* neglected; hence the females who find employment in the fields in more fertile counties, are here deprived of the means of rendering themselves useful in any considerable degree, at least in the business of husbandry.

Nature, ever mindful of the wants of *all* her children, did not leave them destitute of the means of providing for the demands of the day, even in those unhospitable regions; and the subject before us, presents a memorable proof, that the rule has not been deviated from in the present instance.

The extensive mountains in which this district abounds, are covered with innumerable flocks of sheep, the manufactory of whose fleeces into woollen cloths, would furnish employment for more than double the number of the present inhabitants. Yet, wonderful as it must seem, the wool is almost wholly purchased by dealers in that article,

article, as soon as it is separated from the sheep, who send it, some one, some two hundred miles to be manufactured; there it furnishes the necessaries—the comforts of life, to thousands of our more deserving—more industrious fellow subjects; while the natives of the mountains where the wool grew, are either idle, or manufacturing the refuse of it into stockings, in the pitiful way just mentioned. To complete our humiliation, part of the wool thus manufactured into cloth, is sent back for our consumption, the said 200 hundred miles again. When we thus pay ten shillings for that quantity of wool for which we received about one, and looking around us contemplate the wretched state of our own poor, let us wrap the fine garment round us with what *comfort* and *pride we can.*

This is a calamity, which the poor cannot of themselves remove, and which the wealthy do not feel. But the present genius of the times may alter. Who knows but that some one of these sequestered valleys may yet produce a patriot, who, throwing aside the stiff embroidered tinsels, and frivolous trappings of state, which too often surround high stations; and, calling to his dejected countrymen to lay aside their indolence, and their sloth, prevail on them to follow the path that leads to comfort, to wealth, and to independency.

The Brecknockshire Agriculture Society. This respectable association, I am informed, was either the first or second of that kind established in this island. It has now been in existence for near forty years. To the original promoter, as well as the present supporters of this most laudable institution, the public are in a great measure indebted for the rapid advancement which agriculture has made in some quarters of this county, during that period. Most of the gentlemen of the county are suscribers; and a very handsome

some sum is annually distributed among candidates who excel in various branches of husbandry. The *premiums* are most impartially bestowed; yet there are nine-tenths of the inhabitants of this county, that have no chance of ever being benefited by them, in the smallest degree, since they can never presume to become candidates. The occupiers of the small portion of good land, which this county contains, must always have the *premiums*. The inhabitants of the hilly parts, in some places, scarcely yet know that there is such a society in existence; so little intercourse is there between the inhabitants of the *rich* and *poor* districts of this county.

Contrast between good and bad Farming. There are some farms in this district, but I hope their number is small, who are so blind to their own interest, as to take the following rotation of crops.

1st year, wheat. 2d year, barley. 3d year, oats. 4th year, pease. 5th year, oats, with clover.

How different is the following system, successfully adopted in the same county.

1st year, wheat on clover hay of one year's standing.

2d year, turnips.

3d year, barley, sow clover.

4th year, clover spring feed; 2d crop for seed.

Second Course.

1st year, wheat.

2d year, barley, sow clover.

3d year, clover, *spring feed*; 2d crop for seed. Lime and muck the clover sward about Michaelmas, then plough it down, and on the top of the furrow sow wheat. Then turnips, and so round again.

This is the invariable practice of Mr. Thomas Edward, of Aberlunvey*, in the hundred of Talgarth, who stands eminently

* It is remarkable that the two gentlemen, whose practice do most credit to the agriculture of this county, have neither of them been brought up farmers;

eminently distinguished in a district abounding with the best farmers in South Wales. His land is a kindly rich soil, whose characteristic feature is sandy.

He never sows any oats. When he sows pease, which is but seldom, wheat or turnips always follow. Let those who tell us that they cannot keep their land *clean from weeds* without a fallow, come to Aberlunvey; and then say, if they know a farm in all the county, that is kept *equally clean* with the *usual whole year's fallow.*

Hints for the farther Improvement in the County of Brecon.

There are large morasses in various part of this county, interspersed through its extensive commons. These turbaries are situate often one, two, or three miles from most of the small hilly farms. These might be turned to advantage by burning large quantities of the peat in summer, and carrying the ashes to be laid in spring upon their poor coarse meadows, which would not only *double* the present *quantity* of hay, but also add much to the *quality.* In several parts of England peat-ashes are bought at a

but have, till the meridian of life, followed professions no way connected with agriculture. Had this not been the case, I suspect that we should not have seen either of them follow that courſe of husbandry, which they do at this day. During infancy, the tender mind, unable to judge for itself, must, from the force of *precept* and *example*, have been initiated into the principles of the "*Old School.*" When the judgment begins to exercise that strength, and exert that vigor, which she has acquired during the progress of years, it will be often found, that a prejudice, and a partiality for *early habits*, have been equally busy in mustering up forces to oppose *her mandates.* What has cost much labour to acquire, we do not like to throw away. Few there are who can bear to be told, that they have been labouring under a mistake all the former part of their lives.

high price, and carried 10 or 15 miles to be laid on the land. In this corner they are quite neglected, not a handful laid on the land. The only reason that can be given is, that they are at *hand*, and can be had for *nothing*, of course they are despised.

Great part of the hilly farms, on the north-west corner of this county especially, are far from lime, 30 to 35 miles; any substitute for that manure would, therefore, be very desirable. Sheep are never folded in this country; and there are, comparatively speaking, no bounds to the extent of the commons, which are in summer stocked with sheep. This animal has a most partial attachment to fresh *ploughed up ground*, which, in summer, it will always prefer to *herbage* for *its bed*. If a land, or any side of a bank of red earth be near, the sheep will be there often in hot weather.

If while the shearers are stripping it of the fleece, they happen to give the animal a wound, it will often rub the affected place in the first fresh earth it can get at.

The farmer whose land is surrounded by large commons stocked with innumerable flocks of sheep, may avail himself of the animal's attachment to *fresh mould thus*.

Fix upon some spot of the adjoining common, from which he can afterwards carry the earth with most ease to himself, and in the spring plough up half an acre, or an acre of it. The sheep that depasture on the surrounding hills will, of their own accord, make this the place of rendezvous; and, by their dung and urine, will make the surface for a few inches deep a most rich and valuable manure, whilst his own sheep, and those of his neighbours, will find here a comfortable asylum from the flies, and other vermin that infest all spots that are covered with *any herbage*. Let him plough this ground again about Michaelmas, to make it easier to lift into the cart, and lay it on his corn land, and he will find an advantage of which he is little aware, should he get the better of his aversion

to *innovation* so far as to make the experiment. There is one objection to the adoption of this scheme in all countries that lie in the vicinity of large commons, where alone it is practicable, because it is attended with *some little labour.* It may be said that the Lord of the Manor would object to both these schemes, because it would be *carrying away the soil.* In some parts of the kingdom this might be the case; but the different lords of manors within this county, are *all* of a description that renders them above the suspicion of availing themselves of that power they possess on *such* an occasion, farther than just to preserve their *right*, by the most trifling acknowledgement. Besides, their own extensive territorial possessions makes them too much interested in the improvement of the county, to suffer them to oppose any plan that was likely, in any degree, to contribute to its general prosperity.

The proprietors of lands situated in the mountainous districts of this county, would contribute much to the improvement of the country, were they to restrict their respective tenants, by a covenant in their leases, to adopt some *rational rotation of crops*; and not suffer them to ruin themselves and the land by taking five, six, or seven crops of oats following; a succession which would, in time, destroy the richest land in the kingdom. There is such an attachment to the "Old School," that nothing but *bribes*, or *compulsion* can remove it. Persons are now alive, who remember the *first lime* being laid on land in the neighbourhood of Builth. The landlords got it first introduced by the *force of bribery.* In the leases about 30 years back, and some even granted at present, *this* forms part of the condition. "The landlord reserves a rent, which the tenant agrees to pay; but *in case the tenant shall every year lay a certain number of bushels of lime*, in a husbandlike manner, on some proper places of the demised premises, the landlord *agrees to allow* him a *certain sum yearly out of the said*

rent. If the tenant neglects to lay the lime on his land, he forfeits all claim to this allowance.

Could the cultivation of clover, turnips, potatoes, and pease, be introduced into the hilly districts of this county by some such *species of bribery*, the landlords would soon see a change on the face of the country. So totally blind are the tenants to the advantage of any *green crops*, and so powerful is the effect of habitual idleness, that they scarce raise any thing even for family use in their gardens, which, on the approach of winter, are generally left open to the *ingress* and *egress* of the sheep and cattle!!

Here we shall have the hue and cry raised against the soil. That soil, however, cannot be *very bad*, that would bear *even the seed* of oats sown for six or seven years following without any manure.

Upon examining the gardens and fields of such gentlemen in these hilly districts as do *common justice* to the land, we shall find that the complaints against the soil are true only in a very limited degree.

It will be said, that their breed of horse and neat cattle are so small and weak, that they cannot give their land the requisite number of ploughings. It is true, that in the spring, after being half starved all the winter, this is the case; but in autumn, after a whole summer's good run on the hills in idleness, the fact is otherwise. Instead of doing *some part* of the ploughing in autumn and the beginning of winter, when their cattle are *strong* and in *good spirit*, every thing is put off, *as long as it is possible to put it off.*

The genius of *mischief* could not contrive things worse than they are in this respect. For the ploughing, even of the land that has lain for ten or twelve months *(to recover itself)* is not begun until the *spring*, the only season of the whole year in which their cattle are least able to perform the work. The land must not be *turned up to the air* until the time of *sowing* arrives; for then it might require a *se-*

cend ploughing. To give *two ploughings* to the land for *one crop* would be *ruination*. Ploughing an acre *once* is worth more than *two years rent* of the land! What a deal of labour would be here thrown away!!!

*Turnpike Roads**. When the trustees finish what they have now in hand, that part of the thoroughfare from Milford-haven to London that lies within this county, may challenge any space of equal extent between these points, for safety, commodiousness, and equality of surface. There is just one place of about two miles in length between Brecon and Crickhowel, *too well remembered* by travellers by the name of *Bwlch*. This pass still partakes of the *bold* features of the *old road*; and until this insufferable obstacle is removed, it will, in some measure, withhold from the gentlemen of this county, a share of that unlimited portion of public gratitude, to which they will then be justly intitled, for their spirited exertions in rendering the thoroughfare through this county, as safe and commodious as it has always been beautiful.

In order to avoid this horrible precipice, it will be requisite to keep by the side of the river Usk, to the south of the present road for above two miles. The well-wishers

* There is a method adopted of late by the trustees, which does great credit to them. The road, when once it is put into proper repair, is farmed out by the year, or for a term of years, at so much per mile, to keep and leave it in repair at the end of the term. The price is from two to five guineas per mile, according to the distance from materials. They endeavour to get every farmer to take that part of the road that goes through his own farm—a wise, and advantageous measure this for *both parties*—since the farmer can repair the road along his own land for one half the price that he could do were it only one or two miles off. If the team is going from home empty, it takes a load of gravel to lay on some hole of the road. If it returns empty, it does the same. When the clover is to be cleared of the stones, they are wanted for the road, and will pay for doing it. If there is a hole or two in the road, it may be mended in an evening, or a morning, in less time than a man who lives two miles off, would lose in coming to look at it. There is no method of keeping the highways in repair, so prudent for the trustees to adopt, in any district, as that of letting every farmer have the road through or by the side of his own land, at an annual rent.

to public utility console themselves with the recollection, that the new road, if mended, goes through the land of a gentleman of the first rank and consequence in the county, who, although it may rather encroach upon his demesne, they are in hopes will exert his usual liberality of mind upon this occasion; since by making such a sacrifice, he would confer no small obligation upon the county, as well as the public at large.

When this road is finished, it is to be hoped that some gentlemen, in other counties, who make this their thoroughfare, will be induced to examine the turnpike road in their respective districts. For let it be remembered, that every improvement that has hitherto been introduced into South Wales, the county of Brecon has always taken the lead. Here the first turnpike road was made. Here the first society for the encouragement of agriculture was formed; and a county, *to the west*, does offer annually a premium of *ten guineas*, to any of their farmers servants, who will come and reside for three years in Brecknockshire, and learn to hold the plough.

THE END.

been remarked by some friends, to whose judgment of the preceding report will always pay the greatest hat he has drawn a description of the mountains of ire, in which poverty and sterility are too strongly t as they candidly admit that they had never seen of the county to which that part of the report prin- es, he begs leave to assure them, that when they examine it, they will find the picture not materially n the original. Brecknockshire, however, has too auties to boast of, to be ashamed to own the poverty hills.

en farther remarked, that he has given a decided the soil and neat cattle of Herefordshire over re. What admits of demonstation requires not to

hire breed weighs from 14 *to* 28 *stone a quarter.*
shire from 8 *to* 16 *stone a quarter.*
e facts *before his eyes, was it possible for him to f of giving a* very *decided preference to the Here- ed?*

counties are separated in some places by a small her places by an imaginary line. *He trusts that isite for him to remind the reader, that he does insinuate that, for some distance, on both sides of y there is the smallest difference, either in the soil, handry. He always alludes to the* general run *n both counties.*

GENERAL VIEW

OF THE

AGRICULTURE

OF THE

COUNTY OF RADN

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AGRICULTURE

OF THE

COUNTY OF RADNO

WITH

OBSERVATIONS ON THE MEANS OF ITS IMPROVEMEN

BY

JOHN CLARK,

OF BUILTH, BRECONSHIRE.

DRAWN UP FOR THE CONSIDERATION OF THE BOARD OF AGRICUL
AND INTERNAL IMPROVEMENT.

LONDON:

PRINTED BY COLIN MACRAE.

S455
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no.6

TO THE READER.

It is requested that this paper, may be returned to the Board griculture, at its Office in London, with any additional remarl d observations which may occur on the perusal, *written on t rgin*, as soon as may be convenient.

It is hardly necessary to add, that the Board does not consid elf responsible for any fact or observation contained in this R rt, which at present is printed and circulated for the purpos rely, of procuring farther information respecting the husband this district, and of enabling every one to contribute his mi the improvement of the country.

The Board has adopted the same plan, in regard to all the oth unties in the united kingdom; and will be happy to give eve sistance in its power, to any person, who may be desirous of in roving his breed of cattle, sheep, &c. or of trying any usef periment in Husbandry.

LONDON, JUNE, 1794.

RADNORSHIRE.

INTRODUCTION.

THIS is an inland county, and one of the six that compose South Wales. It is bounded on the north by the counties of Montgomery and Salop, on the east by the county of Hereford, and on the south and west by the counties of Brecon and Cardigan. It is situated partly in the dioceses of St. David, and partly in that of Hereford. Two members, one for the county, and one for the borough of New Radnor, compose its quota of the representatives of the Commons of Great Britain in Parliament; and 120 that of the national militia. It contains six hundreds,* fifty-two parishes, 510 square miles, or 326,400 acres. The language of the inhabitants is English in the lower half, and Welsh in the upper; their number may be about 18,000.

The Climate of this county, excepting Wye side, and the vallies that are interspersed through it, is colder than that of the other adjoining counties, except the upper parts of Breconshire. There are two causes that contribute their mutual aid to render the country cold: one, its superior elevation, the water

* Painscastle, Radnor, Knighton, Kevenllice, Collwen, and Rhyadergowy. Four market towns, Prestigne, Knighton, Radnor and Rhaeadr-

water falling from its hills toward almost every point of the compass; the other, the damp clayey nature of a great part of the soil, especially towards the center.

Most of the good land in this county lies on the north-east, and south skirts, or on the banks of a number of beautiful little brooks and streams with which it is almost every where intersected. The banks of these from whence the flood has, in the progress of ages, washed away the superabundance of clay, in some degree, and being sheltered by their respective mountains, are, however, composed of a soil congenial to vegetation, and endued with a climate mild and temperate.

The Soil—is very different, some contains too much sand: but the most prevailing infirmities to which it is subject, is when it contains too great a quantity of clay. This is a most unlucky soil, in a cold, bleak, mountainous district, and in the occupation of bad farmers. The good and the bad soil are so intermixed, that the most rational division seems to be into hills and vallies.

The Soil of the Vallies.—The principal vale is Wye Side which, and the Elan, bound this county for about forty miles, and separate it from Brecconshire. The soil throughout all that space partakes of the genus and colour of the hill or mountain immediately above it, from whence the flood has washed down the particles of earth of which it is composed. The hills of the upper district are composed of a hard grey granet of the *siliceous genus*, and the soil of the vallies is of course of the same genus and colour, and very different, in many places, from the stone and soil of the opposite side of the Wye in Brecconshire, which is composed of a weak rab of the *argillaceous genus*.

Below the Edow river, however, the stone of the hill begins to assume a darker hue, inclining to red. The shade becomes

becomes darker by degrees as we descend by the Wye Side, till we arrive at Rhydspence, the junction with Hereford-shire. In proportion as the soil becomes darker, it also becomes richer and more congenial to vegetation, partaking in a great measure of the nature of the soil of the opposite lands in Breconshire, but of a lighter shade, and, upon the whole, perhaps not quite so rich. The superiority of the local situation, a south-east aspect, however, removes in a considerable degree, if not wholly, this inequality, and renders the hundred of Painscastle beyond comparison the most desirable situation within this county. The superior industry and good management of the inhabitants, as farmers and cultivators of the soil, have been successfully exerted to avail themselves of every natural advantage. They contribute, in a considerable degree, to rescue this much neglected county from a censure almost general, respecting the present humiliating state of its agriculture, excepting a few smal' spots along the skirts, or by the side of some little streams.

The next portion of this county, in point of importance to its agriculture, is the Vale of Radnor; the soil, very different from that of Painscastle, is of a dark grey colour, well adapted to the nourishing of grain and grass, to which it is alike congenial. But a great part of the land is prevented from being flooded by the hollow bed which the brook has made for itself on the center of the Vale, from whence it cannot easily be raised, though it might be made use of if begun at some of the higher levels. The lands are in general very rich, had they been in the occupation of farmers who would do them common justice, by bestowing on them even a tolerable portion of cultivation. The stones of the hills on the north side are of a knidly sandy nature; those on the south an uncommonly valuable limestone. This lime is conveyed ten, fifteen, or twenty miles

off for manure, and is found to be preferable to any other in the adjoining counties; yet the inhabitants of this Vale do not use it much, although it is carried by others to so great a distance. Perhaps in the estimation of some people, what is easily had must be of little value. The whole Vale is surrounded by fine dry sheep-walks. The forest of Radnor was once famous for its wool; many thousand sheep are still pastured there in summer.

The Tame River divides this district from Shropshire, on the north. There is a narrow border of uncommon good land on the banks of that river, round Knighton.

The river Lugg, here in its infancy, also waters a beautiful little vale in this county before it enters Herefordshire; but the water here is not so very friendly to vegetation, as it is in Herefordshire.

The Ithan River, which owes its birth to the same hill with the Tame, rises within this county, near its confines with Montgomeryshire. It leads its course nearly through the center of the county, in a south westerly direction. Having received the waters which the Canddwr, Glowedoc, Camaron, Dulas, and Haford, delightful little streams, had collected from their respective districts, throws its contents into the Wye, four miles above Builth.

The Edow rises in Leansaintfread, towards the middle of the county, and after watering a fine narrow vale, empties itself into the Wye, at the romantic village of Aberedow, four miles below Builth.

Each of these little streams has its own little vale, the immediate banks of which are mostly meadows, for the greater convenience of having water turned over them. Some of these streams, the Ithan in particular, are too strong to be turned over the lands, but the lesser brooks, towards the lower parts in particular, are used to great advantage. Flooding, however, is not used near so much as it might have been. From this neglect, a reduction in the quantity

of

is annually sustained, to a considerable amount. ircumstance is the more to be regretted, because this comes under the description of a *rearing district*, in a long winter, the fodder is not only dear, but be had at any price.

soil, towards the middle of the county, is, in many f a weak spungy clay. The stones of the hills (a rab) ne argillaceous genus. Water is peculiarly hurtful to cies of soil, with which, from its retentive nature, it ith great reluctance. Another misfortune attending , is, that it keeps possession of that portion of water catches first hold of, to the exclusion of the air and richer moisture contained in the atmosphere, the ore house of nature.

der, therefore, to render this soil productive, the ttachment to its mortal enemy, water, ought to be . This can be accomplished only by deep and re-loughings, which, by separating the parts, opens a of passages for the entrance of the sun's genial to dry up that obnoxious moisture, which, in its tate, proves so hurtful to all useful vegetables.

xtensive hundred of Rhydargowy, containing about of this county, is, except a few strips on the banks ooks, very barren; the natural poverty of the soil ed still more unproductive, from the uncommon in- of the inhabitants, who cultivate the land (if the tching they give it in spring deserves that appellation) me manner nearly as their ancestors did a thousand o.

e how, most unaccountably, happens, that in al- mountainous districts in this island, where the land lly poor, and stands most in need of the assistance vation from the industry of man, it is always glected than the richer lands that do not require ivation. I have never yet seen a single farm in any

hilly part of this island that had common justice done to it, either in the cultivation of the soil, or in the rotation of the crops. Did the farmers of the hundred of Painscastle adopt a mode of cultivating their lands, and take the same number of crops that the farmers of the hundred of Rhydargowy do, they would not have half the produce that they have at present.

This subject is of great national importance; let us examine it a little.

In mountainous districts, the vallies, the bottoms, and lower sides of hills, are the most cultivated. From the superior elevation of the mountains that immediately surround these situations, a number of springs will be continually issuing from the sides of the hills; the water, from these in its passage down to the first brook, will chill the land, and prevent the growth of any useful vegetation. Hence all lands by the side of such streams are liable to be injured by a superabundance of water, that is continually either oozing or springing from the sides of the surrounding mountains. A very small portion of labour would be sufficient to make a little trench to direct the mountain water down by the side of a field, and save the land from this continually devouring enemy. The thing, however, is not done, and thousands of acres of good hilly land are thus lost.

2. The soil being naturally weak, and containing only a limited quantity of the food of plants, care, it is presumed, would be taken to keep the land clean from weeds, while the corn was in the ground, that no part of the little stock, destined for the support of the grain, should be swallowed up by these intruders.

The practice, however, is so far different, that on viewing almost any field in this district, under corn, one would be ready to suspect that it had been ploughed for no other purpose than to produce a most luxuriant crop of weeds. These hardy natives look fair and healthy, exulting in their native soil,

the corn exhibits marks of pale sickness and lan-
isease.

soil not being endued with a strength of body to
ber of exhausting crops, great care, it is presumed,
urse be taken, that no more than one white corn
en without some green crop being introduced, to
eak land time to recover before any other ex-
rop is sown; since two crops of white corn
e this poor soil such a wound as it would not
er. It would always, no doubt, be kept in re-
e, that wheat, barley, oats, and rye, depend in a
ure upon the land for their support, and, therefore
ollow each other, much less any one of them two
wing on the same field. This would give a
ood rich land, but to this poor land would be ab-
. The thing, of course, will never be attempted.
the same time, not be forgotten, that clover,
ips, potatoes, and other green crops, depend, in a
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t from the air; one or other of these will, of
sown after every crop of wheat, barley, rye, or
hich means the land will have time to recover, in
e, the injury which it had sustained by the former
crop of white corn.

ight, probably, be the suggestions of theory, now
practice!

ime in the winter, or spring, they take the little
have to land that has lain for some years in pas-
ugh it in, sow barley. After the barley, second
; third year, oats; fourth year, oats; fifth year,
longer, if the land will return the seed. When
ill not return the seed, let it lay for some years
ecover itself.

t necessary to add, that the finest land in England
ndered unproductive by similar bad usage.

All

All the land that is wet, is, in its present state, very unproductive, yielding rushes and other course aquetices. The wetness, however, shews, that it contains a considerable proportion of clay, and of course, a staple, which, when properly meliorated by repeated exposure to the benign influence of the atmosphere, would, when relieved from the superabundance of water, enable this land to bear crops of good grain, under proper regulations.

Such land ought always to be, up and down; never suffered to lie for many years in pasture, because that, by enabling the soil to acquire a hard surface, would, by shutting out the sun and air, encourage it to return back to its original bad state.

The thing actually done is the very reverse of this. The wet land, provincially, rotten land, has remained from age to age in the same wet state in which we now behold it, without the smallest attempt made to recover it from its lost state. Whilst the little dry spots, provincially, healthy land, are ploughed from year to year, in the way just mentioned; although from its weak state it is not near so well calculated as the clayey land, to bear such crops.

There is, however, a fashion in farming, as well as in dress. The misfortune is, that whilst this is fluctuating and continually undergoing changes almost daily, that stands steadily and unchangeably the same for ages. This is the more to be regretted, because, almost any change in the present practice of agriculture would be of service to the district under review.

The Common Mountains or Waste Lands—will, perhaps, enable us, in some measure, to account for that slovenly practice of husbandry, which has called forth a severity of well meant animadversions, which nothing but truth could justify, and which no other motives than a sincere wish to see it it in some degree removed, could induce the writer to

impose

himself the unpleasant task of bringing them
public inspection. He would be peculiarly
hat individual that would shew him that things
han he hath represented them.
large districts of commons in this county, dis-
nost every direction, extending for some miles,
part, especially, without a single house or in-
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ace out the root of that evil, which has proved
to the agriculture of the greatest part of this

ensive commons furnish, in some places, so
for neat cattle and sheep pasture, that the
ng to these for his support, gives himself little
his farm. His stock brings him money, and
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ngs seem to go on very well. One man raises
county, and another raises sheep and cattle in
ty; each supplies the wants of the other, and
is seemingly as they ought to be: but if, while
the kingdom are going on with improve-
ndering the land twice or thrice as productive
century back, the Radnorshire Hill farmer
ts to cultivate or improve his land, he cannot
success in the improvement of his breed; for
d is suffered to lie in its present neglected state,
d that may be introduced, will have a tendency
the size of the small natives. He must, there-
to make the same money with a farmer in the
nty of Hereford, rear three head of neat cattle
hey do; or, at least, double the number that his
d a breed suited to the lands when so improved,
him. There cannot, therefore, be any material
in the breed, till the land is improved; and I
have

have reason to fear, that the land will not be improved while the people have an opportunity of living idle on the profits of the stock that depasture on these extensive commons.

If this be a fair statement of the case, then the commons are in their present state hurtful to the community at large, in two points of view. They cannot admit of any improvement themselves, in their present state, from the nature of the property; of course here is a large blank equal to near two-thirds of the whole county. They prevent the private property from being cultivated, by holding forth to the inhabitants the means of subsisting without labour.

The quantity of common in this county may be estimated at two hundred thousand acres. Of this quantity, about fifty thousand acres are better land than the general run of the private property in the county; and if inclosed, would be worth from seven to eight shillings a statute acre.

The cultivation of this portion of the common might find employment and maintenance for a number of people equal to one-half the present inhabitants.

The remaining hundred and fifty thousand acres might be kept in pasture and woodlands; the soil being in a peculiar degree favourable to the growth of timber, oak in particular. There are some hundred acres of common hills, that are at present covered with timber, without any inclosures. These have got up in spite of every danger and difficulty that surround them. They are mostly on the side of hills, steep banks, or rocks, where they were in some measure protected from the browzing of the cattle, during their tender age. The soil of this county is remarkably well adapted to the growth of oak. Even in the upper district, where the land is so much despised from its present appearance, in consequence of unusual bad treatment, I have seen some remarkable instances of the oak's partiality to this soil.

nt.—We shall not probably be far distant from the
f we divide the county thus:

The tillage land, - - -	86,000
Meadows, pastures, and wood, -	400.00
The waste lands, - -	200.000
Total extent of the county,	326,000 acres.

Size of the Farms — is, in general, small. The
rom eighty to one hundred pounds rent; the smaller,
n to thirty pounds.

land is occupied—mostly in tillage and hay grounds,
anks of the Wye, and that of the smaller brooks;
e of Radnor, and that part of the county that joins
dshire: but, in the interior parts of the district, in
ing of neat cattle, sheep, and dairy.

cial Grasses—are, the red and white clover, and ray
o which are sometimes added the seeds of the natural
of the district, gathered from the stable mangers. It
regretted, however, in such cases, that the seeds of
us weeds are sown along with those of the wild
and other kindly grasses, in which the soil naturally
. These grasses, however, are seldom sown, except
e land is meant to lay for some years in pasture.
quantity of seed is from seven to ten pound of clover,
gallons of ray-grass, per statute acre.

rains—are, wheat, barley, pease, rye, with oats of
kinds.
quantity of seed sown on a statute acre is,
heat, when early sown, from 14 to 15 gallons,
to, when late, - - 15 to 17 ditto,
rley, - - - - 25 to 30 ditto,

Oats, - - - -	24 to 30	ditto,
Pease, the large grey, - -	27 to 30	ditto,
White, and other smaller pease,	22 to 23	ditto.

ROTATION OF CROPS.

First year, wheat after fallow.
Second year, pease.
Third year, barley; sow clover, let the clover lay for one or two years; then plough up the clover, lay for Michaelmas wheat. This is the practice of the good farmers in the lower district of the county.

SECOND SYSTEM.

First year, wheat after a fallow.
Second year, barley.
Third year, pease.
Fourth year, oats, and sow clover. This is the practice of middling farms.

THIRD SYSTEM, IN THE HILLY PART OF THE COUNTY.

First year, rye or barley; then for the next five or six years, oats, while the land continues to make a return of a quantity equal to the seed sown. This is the practice of farmers who are a disgrace to the profession, and who must trust almost wholly to the increase in their live stock for support. There is, however, little prospect of seeing any improvements taking place in this part of the county, while the extensive waste lands hold forth to the people the means of subsisting without labour.

The breed of neat cattle are here superior to that of most of the mountainous district of South Wales, weighing from ten to twenty stone, of twelve pounds each, a quarter. The general colour red, and of the brindled kind. The native

ck small breed is mostly out, in consequence of a mixture th that of Hereford and Shropshire. The Herefordshire ed, it is true, always dwindle away and grow smaller, in portion as they are carried higher into the mountainous rts of this county. But if the soil had common justice ne to it in the cultivation, this misfortune would be consirably diminished.

That mixed with the Hereford breed, does very well on side of the Wye, and the lower parts, where the land is erably well cultivated. They are, however, even there, t only much inferior in size, but, in general, want the ld face, the true characteristic mark of a Herefordshire . The sheep are the small natives of the district, weigh- from seven to thirteen pounds a quarter. The wool ch inferior in quantity and quality, to that of the Rye- d breed of Herefordshire. When the pasture land is y they are very healthy, and in the present neglected state cultivation, perhaps, better adapted to the district than any er that could be introduced. When moved into the adning counties of England, they thrive well, and are found be of a more healthy constitution, and less liable to rot than the natives of these districts. The fleece, from e to two pounds weight.

Manures,—besides the produce of the land, is lime, which, wever, is used rather sparingly on account of its high ce; for, although they have excellent lime-stone in the wer part of the county, the coal is brought from a great tance to burn it. The quantity of lime laid on a statute re is from twenty-one to twenty-four barrels, of twenty- e gallons each. On light land, however, this quantity is nd to have a very great and beneficial effect for five or years. Some farmers, however, use a much less quantity. he making of dunghills is much neglected.

The Draining of Land—has of late been well attended to by most of the superior managers on the skirts of the county; but in general it is shamefully neglected, although no other improvement yet introduced into the district has answered so well. Drain-makers have here engaged to drain land, and take the increase in the produce of hay, for three years, as a recompence for the expence; yet such is the wonderful effect of habitual indolence, that the land is suffered to soak under water from age to age, especially in the interior and upper parts of the county. The drains are from eight to ten inches at the top, and from six to eight at the bottom; from two feet six inches to three feet deep. They are filled with small stones within three inches of the top; the stones will sink three inches more; and six inches are at all times full deep for the plough here.

The expence of making the drains is a penny a yard; the farmer finding rough stones and straw. They are well executed. This operation is, however, sometimes attended with much superfluous expence, by making a greater number of drains than there is occasion for. To suppose that this is in some measure occasioned by the drainers being paid by the yard of drains made, and not by the quantity of land relieved from the water, would be uncharitable; we must therefore conclude, that the master drainer who lays them out has not duly considered the anatomical structure of the earth. The human arm may convey some idea of it. If an incision be made across the arm, it will cut through all the veins and arteries in its way; but if the incision be made along the arm, it will cut only one at a time. Hence, when the land is oppressed by water oozing from a number of small springs in the upper side of the field, one drain laid judiciously across, with a gentle fall to the next ditch, may do as much execution as a dozen run downwards from as many springs. I have been told that no drain could be superfluous that carried water. But the conclusion does not

follow from the premises, since the water of
y be introduced into twenty different drains.

of Husbandry—admit of much improvement in
They are, in general, too heavy, and by that
the cattle to unnecessary labour. The ploughs
too long, being from fifteen to sixteen feet;
ely been made from ten to eleven feet; these
nswer much better.

Labour.—The general proportion is, two ox
horse team. In the upper district, two horses
n work the team They are sensible of the
working oxen, but the distance from lime and
hem to keep at least one horse team on each

to finish *Sowing* in the lower parts of the
n May; and harvest begins the second week
n the upper district, however, much later.
o common fields; all the land is inclosed, ex-
on mountains.

the Fields—is from fifteen to twenty acres, on
n three to six on small farms.

—are made by grubbing up such quicks as
ost conveniently in the woods and coppices;
November to March. The length of the
ur to five feet. A bank of two or three feet
l the quicks, when set in the ground. The
made too shallow, from one to two feet only.
t fault, in a wet soil especially; for if made
p, they would answer the purpose of open
s fences. When the hedges were originally
ght of much importance was committed in
this,

this, as well as well as in most of the surrounding districts; for no attention whatever was paid to lay out the ditches with such a descent as to enable them to receive and carry off the water oozing from the springs, nor the surface water in times of flood, which might in many places have superceded the necessity of under-drains.

The price of making a new hedge and ditch, is two-pence a yard; for platching an old hedge, about a half-penny.

Wages—for a ploughman, from seven to nine pounds a year.

Women, from three to four pounds.

Day labourers, was six shillings a week; last year it rose to seven.

Time of working, from light to dark in winter; from six to six in summer. Half an hour for breakfast, an hour for dinner.

The Price of Provision—is here very fluctuating. It is considered *high*, when

Wheat is at one shilling per gallon,

Barley and pease at seven pence,

Oats at four pence,

Beef at four pence a pound; mutton and veal, four-pence half-penny—*low*, when

Wheat is at seven-pence a gallon,

Barley and pease four-pence,

Oats two pence half-penny.

The common price of poultry, is,

Pullets, six-pence each.

Ducks, seven pence.

Geese, one shilling and six-pence.

Turkeys, two shillings.

nds.—When it is remembered that nearly two-
lands in this county lie waste, and, of course, are
ntrinsic value to the inhabitants than they were a
ars ago, reflections of a very humiliating nature
nselves on the dejected mind. The breast that is
the animating beams of patriotism, must be pe-
t by the unpleasant reflection, that while so many
e countrymen are compelled to find bread by the
of a foreign soil, so large a portion of a county
island should be suffered to lie in the original
ich nature formed it; and that by a degree of
hich must excite the wonder of succeeding ages,
eave in the uncultivated soil that portion of the
iety which a great part of the land is so capable
o the hand of industry: yet I know some men
ty, of whose judgment and patriotism I have the
ion, that are pretty well satisfied with the waste
eir present state, because they support a number
l young cattle in summer, at no expence. All
but it is equally true, that although a shilling
value, a guinea is still more so. If, therefore,
n be made to produce as much food for society
ne do in their present neglected state, the public
well as the land-owners, would be benefited by a
osure of the waste lands in the kingdom.
cipal argument made use of for continuing the
s in their present state, is, that whatever return
nake is all clear profit, as there is not a single
nt in the cultivation of the soil. Yet a very
tion of penetration will surely be sufficient to
at this argument carries in its bosom the seeds of
truction; and that a stronger one could not well
in order to shew the absolute necessity of inclo-
truth of no axiom in politics is more univer-
ted, than, that the wealth of a nation de-
pends

pends on the number of its inhabitants. In proportion, however, to the quantity of land thus locked up from the hand of cultivation, there will always be found a diminution in the number of the people. Of the truth of this remark, the district under review presents a most melancholy instance. Fifty thousand acres, a fourth part only, of the waste lands in this county, would furnish food and employment for ten thousand people more than it now contains; and many of the labourers who are now obliged to find bread in other districts might live comfortably by cultivating their own native soil.

Whether the large towns in this kingdom are too populous, is a proposition which I am not sufficiently qualified to decide: but that the provinces are too thin of inhabitants, may safely be asserted without a moment's hesitation, and that more than one-half the food of society which the land is capable of producing, is left in the soil for want of a sufficient number of hands to cultivate it. Among other benefits that must result from the inclosure of waste lands, one would be, that it would prevent, in some degree, the emigration of the peasants from the provinces to the large towns, by opening a wider field for the exertion of industry in agricultural pursuits.

That the tenants in this county would, in general, consider themselves injured by inclosing the wastes, I have reason to believe. It is not very difficult to point out the cause. When a farm is to be let, in valuing the land, the advantage to be derived from the adjoining common is seldom, if ever, taken into consideration. Whatever little profit the tenant makes by his cattle's depasturing the commons in their present state, he considers as clear gain, because he pays neither rent nor taxes for it. This naturally pleases him. But if these lands had been divided, and his landlord's share marked out for him, he would, of course, expect some rent for it. Here rests the root of the whole evil; and here

ıese destructive resources of indolence, which, by fur-
ng him with the means of a scanty subsistence in the
time, enables him to slumber on, one year after ano-
and by neglecting the cultivation of his land, shuts the
against the entrance of that wealth, which might have
ed himself and family, in place of the absolute neces-
of life, to partake of the comforts, and, in some degree,
xuries of society.

s here taken for granted, that the payment of rent, how-
just, is a misfortune; a burthen of which it behoves the
r to carry as small a share as possible; and that his
crity through life, will depend on the lowness of the
ıat he pays for his farm. To convince him of the
ıry, would certainly require no small portion of elo-
e. Yet, however paradoxical it must appear, it is a
within the reach of demonstration, that no other cir-
ance has contributed to raise the farmers of this king-
to that truly respectable rank which they at present
n society, more than the necessity they were under of
g rents. Were all the occupiers of land in the nation,
pted from the payment of rent, the ruin of themselves
ımilies, as well as a general famine, would, in less than
century, probably be the consequence. And it some
most unaccountably happens, that an advance in the
in the place of depressing, generally invigorates the
of agriculture, by calling forth into action those pow-
ıat had before been permitted to lie dormant.

twithstanding the value which the farmers put upon
ımmons in their present state, I have the permission
gentleman of the first rank and knowledge of agri-
re in this county, and who is not surpassed by any in-
ıal within it for the solidity of his judgment, his un-
ing attention to business, nor for the accuracy of his
nts, to say, that he kept a large stock of sheep on
f the best districts of commons in this county. They

were managed in every respect like those of his neighbours. He kept for many years an account, and although he charged nothing for the pasturage of the commons, yet there was but a small difference between the sum total of the profit and loss.

At last he took a hilly farm into his own; he placed his sheep on this farm, and never suffered them to put a foot again on the commons. He charged his flock with the rent, taxes, and every other expence of attending it; and then it was that he found the profits of his sheep to increase to a very considerable amount.

Should the waste lands in this county be inclosed, 50,000 acres might be converted into tillage, 50,000 planted, and 100,000 acres be employed in pasture.

The advantage which would attend inclosure, may be easily ascertained by any one, who will take the trouble of examining the very different appearance, which the small slices that are occasionally stolen from the common, make after inclosure, from that of the remaining part of the waste.

The Parochial Roads in this county are bad; those called turnpike much worse. The pretence of doing the statute labour, except in cases of absolute necessity, I am informed, is nearly given up; yet common sense is annually insulted by the ridiculous farce of appointing a surveyor of the highway in each parish. Notwithstanding this general neglect, the roads are tolerably safe, except the turnpikes. It hath been remarked, perhaps with more truth than good nature, that it was a most fortunate circumstance for the inhabitants, that the funds of the trustees were but small, since they were not able, on that account, to ruin above one half of the roads, by making them turnpikes. The method of making turnpikes here is rather singular. With the exception of a few spots, the old roads, in use before the introduction of

wheel

wheel carriages, were followed up and down hill. The contractors for making the turnpikes, formed the road by gathering it in the form of a large corn ridge, by two or three ploughings. A little soft slate, (rab) on the top of this soft mould, finished the operation. When the horse's hoof and waggon wheel get to the bottom of this mould, the old road is tolerably sound and firm.

This misfortune, however, does not seem to have originated in any want of attention in the acting trustees, but merely from their being too thinly dispersed over the district; for in the neighbourhood of Prestigne and Knighton, where, I am informed, the majority of them reside, the turnpike is kept in very good repair. The luxury, in this county, of good roads, is, in that quarter, still further enhanced by the absence of turnpike gates.* It is unpleasant, however, to add, that the inhabitants of the poorer mountainous districts, are at the same time oppressed by a complicated load of hardships. They pay tolls for travelling bad roads, not unfrequently under indictment, the expence of which they are obliged to pay, as well as that of putting the roads in a state to have them removed. The avenue leading to Builth, from this county, is by far the most productive gate: yet except four hundred pounds advanced by one gentleman about thirty years ago, when the first act was obtained, there has not, I am informed, been one shilling laid out in that quarter since. That gate pays above eighty pounds a year. As there is but little thoroughfare here, most of the money collected at

* A clause in future acts of parliament respecting turnpikes, directing the trustees to apply the money collected at each separate gate, in paying the interest of a sum to be expended in making and repairing the road, in a stretch on both sides of that gate, and not elsewhere, might in future prevent the exercise of a species of oppression, of which the poor inhabitants of this poor district of the county of Radnor, do not more loudly than justly complain.

this gate, is paid by the inhabitants of the surrounding district. It seems therefore not reconcileable to the principles of public justice, that about sixty pounds should annually be applied, to pay the interest of a sum expended, in making a road at the other end of the county, and twenty miles distant from this gate.

The Woodlands—are here kept under no system; nor is the smallest care taken of them by the land-owners in general, who abandon them to the merciless axe of their tenants and cottagers. That class of men, by a species of barbarity, consecrated by immemorable usage, consider all trees as intruders on their lands, and however negligent they may be in other respects, they are in general very careful to destroy all young plants, before they arrive at an age to entitle them to the appellation of *timber*. For after that period, the property in them would be in danger of being conveyed, from the tenant to the landlord. There are, however, a few exceptions to this general practice.

Tenants of superior ingenuity, have contrived a method of getting back the property in trees, which, by their own or their predecessor's negligence, had been suffered to arrive at maturity, and by that means became the property of the landlord. In winter or spring, a few of the lower boughs are cut off and burned out of sight; the next year a few more share the same fate; the third year the top is cut off, after which the tree becomes for ever afterwards the property of the tenant, who, by the custom of the country, is entitled to top it as often as he pleases, coming then under the denomination of a *rundle*.

The commission of these depredations, becomes the more mortifying, from the recollection that few, if any, mountainous districts in this island, are so well adapted by nature, to the propagation of timber as that under review. The whole county seems to have been, at some distant period,

se forest; and were it left uninhabited for one
ould all be covered with timber again.
k and ash are the great favourites of this soil, and
ealthy as well as the most valuable of the ancient
Exotics lately planted by some gentlemen, have
ally been found to thrive uncommonly well, par-
e *larch*, and the different species of the *pine* and

een taken for granted, that the Scotch fir was not
planting itself in this latitude; and I have not
single instance where the fir rose from the seed's
ut of the *cone* as it fell from the tree, without
in a seed bed, except in the northern part of this
re large forests are known to have risen by the
tions of nature, without any interference on the
n. At Pencarrig, the seat of Thomas Johnes,
this county, however, I found the fact to be

re a few old Scotch fir trees on a knowl on the
the house, where Mr. Johnes pointed out to me a
young fir plants among the grass, that had sprung
e seed which had dropped from the cone, as it
ne parent tree; also a number of fine thriving
t he had taken up from the same place, and
another spot where they were properly protected.
g plants had formerly been annually destroyed by
or eat by the cattle along with the grass.
sm in the face of a steep rock behind the stable,
one fir had escaped the general destruction, by
of the reach of the scythe and the cattle. It is
three feet high, and a most beautiful healthy

r, however, to remove every possibility of any
pecting the capability of the Scotch fir to plant its
es in this latitude, Mr. Johnes has very politely
promised

promised, that the spot round the old trees should, in future, be most sacredly protected from the scythe and cattle, and appropriated wholly to the nourishment of the infant and self-planted fir.*

Paring and Burning—is sometimes practised by the poorer tenants in the hilly districts, as a substitute for lime. Whether this operation be justifiable in any case, has been questioned by men of much experience and deep penetration. That it is dangerous in the hands of an inconsiderate man, who does not look forward to consequences, admits not of a doubt; and it is seldom practised by any others. For one or two years, the crops will be strong and healthy; but it is a species of health, similar to that obtained by the use of spirituous liquors, in the human system, which is invariably followed by debility and disease.

When only one crop of barley had been taken, and the land laid down in clover, burning has been found to answer; but the misfortune is, that in general the land is sown with white corn as long as it will bear the seed, and then left for years after in a great measure useless, until it recovers itself.

This may be termed a *maiden* district, which remains yet to be explored, with respect to its mineralogical wealth. The

* The keelson of the late Royal George, grew on the demesne of Pencarrig, which does not seem to have been more favoured by nature, in the congeniality of the soil, to the growth of timber of an uncommon high value, than in the prudence of the proprietor in the protection of it; and his elegance of taste in the selection of new varieties, to add to those charms which nature has bestowed on his paternal inheritance. Whoever, in viewing the exhibition at London, has marked with due attention the masterly productions of this gentleman's pencil, in reducing to the canvas some of the most majestic features that nature presents in this neighbourhood, will readily give credit to this remark, and as readily dispense with any attempt of mine, to delineate the topographical aspect of the country.

ins exhibit indubitable symptoms of copper,
n; lime-stone, however, is the only discovery
, that has yet been unequivocally ascertained.
as lately discovered some indications of a bed of
carrig, which, if actually found, would more
he value of the landed property in this, as well
parts of Breconshire. Since, besides the great
this fuel for burning lime-stone to manure
l would lay a foundation for the introduction
of manufactures, in pottery wares particularly,
t neighbourhood affords an inexhaustible store
clays.

ries—of any kind, there are none in this county.
se quantity of wool which its flocks produce,
sent by land-carriage to Yorkshire and the
ngland, to be manufactured into cloth; a part
ent back by the same conveyance to be worn
s. When it is observed, that women are here
yed in the cultivation of the soil, and that the
he poorer class are brought up in habitual idle-
hat wool which nature seems to have destined
ort. sent to the other end of the kingdom, to be
factured, awakens sensations of a very humi-
in the dejected mind.
ople are not addicted to any vice, unless idle-
fall under that denomination. Nature has en-
ith great vigour, both of body and mind; and
nothing but the means of becoming useful to
nd to society: and yet, with all these endow-
are, in a great measure, lost to both; except
o are employed in the cultivation of the soil.
owever, be difficult to point out to the poor any
which, without the assistance of the rich, they
ate themselves from their present forlorn state.

Should

Should a cottager's wife get credit for a few stones of wool, and with the assistance of her children spin it, there is no weaver to make it into cloth; and if there was, there is neither tucker nor dyer to prepare it for the market. But even if all these were to be had, *hunger* will not give credit during the time that must elapse, in the performance of these respective operations.

It is melancholy to reflect, that the advance in the price of grain, and other provisions which contribute to the farmer's advantage, has an invariable tendency to oppress the labouring poor; since the wages, which might have been sufficient for a man when the wheat was at seven pence a gallon, is often continued the same when it sells for a shilling. Justice and humanity seem to dictate, that the labourer should have a certain quantity of grain for his weekly maintenance, whatever the price of that quantity should be. This would be nearly the same to the farmers, as they are obliged to make up the deficiency from the poor's rates. But prudence suggests, that every method should be adopted, that can prevent the necessities of the labourers, from forcing them into a habit of applying for relief from that fund.

The farmers in this county, last year, raised the hire of labourers from six to seven shillings a week. Conscientious men, seldom charge their own labourers, the market price for the grain they use.

This district, is wonderfully adapted by nature, for the woollen manufactory. The mountains that produce the fleece, are interspersed by numerous little valleys; and every valley has its own little stream laid out, seemingly for the purpose of working the machines requisite for that employment. Yet a sullen inactivity prevails over the whole county.

This spring, however, something in the shape of a spirit of industry begins to shew itself. Llandrindod Hall, which used to be frequented by people of fashion, to drink the mineral

waters.

n which the country abounds, but which has for
e been deserted by them, has been rented for the
of carrying on a woollen manufactory. The un-
s have engaged the poor, from many of the sur-
parishes, to be employed in that business. This
bably be attended, with the desirable effect, of
up the children of the poorest, to early habits of

n that immense quantity of wool, which this county and Bre-
nually produce, is considered, it is surprising that some person,
, from England, has not made an attempt to establish a woollen
y in some part of South Wales, since many thousand pounds
saved annually by manufacturing the wool here. Rent, pro-
the price of labour, are here cheap. The land carriage, for
e hundred miles, is not the only saving that might be made;
gines that are employed in the manufactory in England are often
y steam. All this expence would here be saved, as there are
e streams tumbling from the sides of the mountains, in almost
ion, that afford a power sufficient, to move all the machines
whole island, in the different manufactories.

FINIS.

APPENDIX

TO THE

SURVEY OF THE COUNTY OF RADNOR.

HINTS FOR FURTHER IMPROVEMENT.

FROM what has been said, it will readily be concluded, that few fortunes have been made by farming in this county; yet a few instances might be adduced, that would be sufficient to shew that the soil here is by no means ungrateful to the hand of industry, when exercised under the guidance of prudence, and directed by judgment. These instances shall, however, at present, be passed over in silence, since the generality of the farmers here most scrupulously avoid mentioning the profits they make of their lands, and would be apt to ascribe the writer's motives, for bringing them forward to public inspection, to very different ones from those, which, he trusts, influences his conduct.

The following *rotation* of crops may, with little hazard, be recommended to the land-owners in the *upper district* of this county, as very beneficial to their tenants, in case they can prevail on them to adopt it, of which, however, I entertain but little hopes.

ON THE BEST TILLAGE LAND.

1st Year, Turnips, strongly mucked.
2d Year, Barley; sow clover.
3d Year, Clover.
4th Year, Wheat.
5th Year, Oats, if oats must be sown; but the best method on such land would be, to begin again with a fallow for turnips.

2. SYSTEM ON THE POORER TILLAGE LAND.

1st Year, Turnips.
2d Year, Barley; sow clover and rye-grass. Let the land lay in pasture for four or five years, then

1st Year, Oats.
2d Year, A fallow.
3d Year, Wheat.
4th Year, Pease.
5th Year, Oats.
6th Year, Fallow for turnips.

The objection to be made to this rotation of crops I am well aware of. It will be said, that oats are too sparingly introduced: that the *oat straw* is the principal support of their cattle in winter, on the profits of which lie their main dependence: that therefore, oats, oats, oats, in perpetual succession, must be still continued. But if the green crops of turnips and clover were to be adopted, they would in a great measure supersede the demand for oat straw, and double the return that the land makes to the farmer by the present destructive practice.

BREAKING UP OLD PASTURE.

EN coarse land, that had long lain in pasture, is to be
nto tillage, paring and burning is generally used in
er district. The following method will in general,
r, be found to be preferable.
he surface sod, with the sward, be cut off, as *at pre-*
h the mattock or the breast-plough; but in place of
this sod, let them be gathered into heaps, in the pro-
of eight or ten on one acre. Let these heaps be
n rows, at the distance of twenty-two yards from
to another, and let the rows be in *straight lines.*
ps will be then distant from each other in the rows
venty-two yards.
mmer, or beginning of autumn, let the space be-
he rows be ploughed, and let it remain in that state
g, when it must be ploughed again, and sown with
hen, (notwithstanding the poverty of the soil)
e *total* absence of weeds, a good crop may be ex-

he preceding year's muck be brought to the field as
nd when the oats are off the land, mix the muck
se heaps together. Let this manure be used for
n the spring, or which is still better, for turnips

re lime can be had, it should be mixed with the sur-
, the first summer.
is not to be expected, that the farmer will risk
eriment on an extensive scale at first, he may try it
rt of a field which he is resolved to burn, and he
the succeeding crops, find a visible advantage in suf-
he surface sward to rot in heaps, in place of burning

it into ashes: and since the expence of this is not greater than that of burning, no material risk will be run.

PEAT ASHES.

THE upper district of this county abounds in extensive turberies. If the farmer would cut a large quantity of peats, and burn them near the pit, the ashes would furnish a most certain manure for his meadows and corn land. It ought, however, to be remembered, that these ashes should be kept perfectly dry till they are laid on the land, and that the land on which they are laid should also be dry.

These ashes should be sown in April or May, on the meadows or corn land, after the seed has been sown in the proportion of from fifteen to twenty bushels an acre.

THE SURFACE OF WASTE LAND AS A MANURE.

THE sheep are not folded in this county. When, therefore, a farm adjoins an extensive common, it would be found of much benefit to plough a small spot of the common next to his inclosed land, which would encourage the sheep that depasture on those hills to use it as a fold at night, and to avoid the flies in hot weather. To carry the surface of the soil, thus enriched, to his land, would be attended with a benefit to his crops, of which he who has never made the experiment is little aware.

HEDGES.

SHOULD the waste, and other neglected lands, ever be inclosed, it has been observed, that it would be difficult, if not impossible, to get quick-hedges to grow in many places. In order, therefore, to insure the health and prosperity of

the quicks, a small quantity of lime should be mixed with the mould in which they are placed; this, in all *reasonable* degrees of elevation, will be a certain means of insuring their growth, as has been experimentally found.

In wet land the lime will have little effect, but sallows and other aquatics should be planted there.

PLANTATIONS.

PLANTING borders, or belts, from fifteen to thirty yards wide, according to the size of the field, would be attended with much benefit in the hilly districts, where shelter is so much wanted, especially against the north and west winds. In flat rich corn lands, these belts, it is true, are very properly objected to, as they prevent the corn from ripening, by with-holding from it the animating rays of the sun. But in hilly cold countries, the same objection does not lie, especially in the *north* and *west*, the points in which shelter is most wanted.

There is the more encouragement to make plantations in the form of borders here, from the recollection that little more expence is required than would be requisite to protect the field *alone*. Every new planted fence ought to have a double ditch, and a double dead fence. One ditch, and one dead fence, on each side of the belt, will be sufficient, as the white thorn hedge may be planted behind each ditch, where they will be out of the reach of the cattle, and by having the mould into which they are planted properly limed, they will, in a few years, be able to protect themselves, before the trees can arrive at such a height as to annoy them.

In order to point out to the reader's own inspection, how far this method of improving this country is reducible to *practice*, I shall take the liberty of recommending to his attention a spot in the upper part of the county, where the experiment has, though on a small scale, been tried with wonderful.

wonderful success, which he may see at Llwynbariad, near Rhayder, the seat of Morgan Evans, Esquire.

About eighteen years back, Mr. Evans planted some waste spots near his house with Scotch and other firs, which are now from twenty to thirty feet in height, and in a most flourishing condition. They have for some years been thrown into the adjoining fields, and afford a pleasant shade in summer, and a comfortable shelter in winter to his stock. By the time the trees are thirty years old, they will make him a return equal at least to what he has obtained in the same space of time from an equal number of acres of the best land on his estate.

This circumstance, together with the Scotch fir's planting itself at Penycarrig, the seat of Thomas Jones, Esq. is well worthy the attention of the land-owners in the upper district of this county, who are desirous either of augmenting their wealth, or adorning their estates.

The judicious and rational system of farming, practised by Mr. Evans in this much neglected quarter of the county, deserves the notice and imitation of his neighbours, and fully confirms what has been so often mentioned in the preceding pages, that the sloth and idleness of the tenant is the cause of the humiliating state of agriculture in this quarter, and ought to be attributed only in a limited degree to the poverty of the soil.

WOOL.

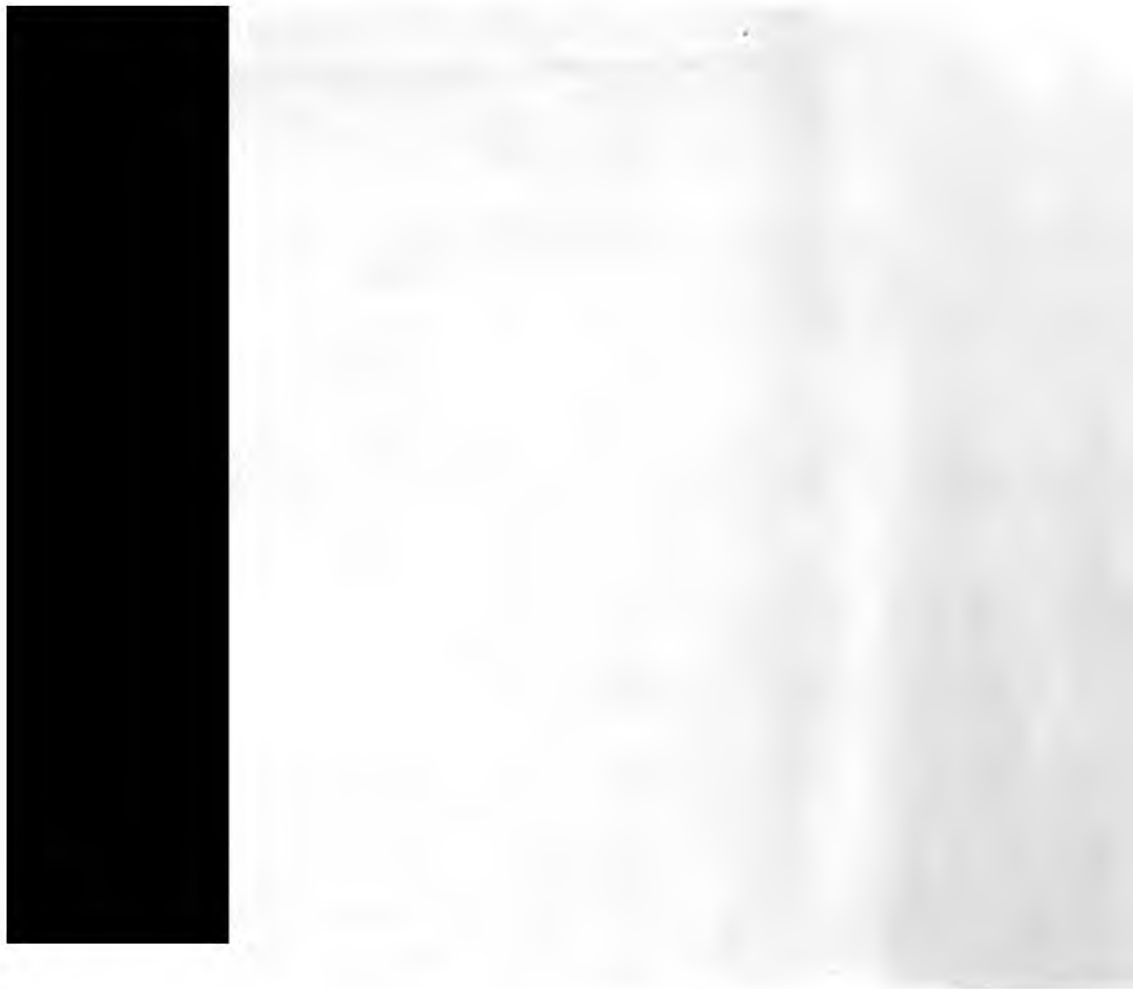
It is found experimentally, that the *same* sheep will produce wool of different degrees of fineness on different farms. The wool-buyers here know well on what farms to look for the finest wool. It is the wool of *particular farms*, more than particular breeds of sheep, that they are anxious to purchase. When a farmer moves, and takes his

sheep

g with him, a change will the first year be visible
l.

nk, by the side of the River Wye, extending
en miles from the river Edow to Herefordshire,
be very congenial to the growth of fine wool.
a south-east one. The stones of the mountains
silicious genus; and the prevailing feature of the
l sand, mixed, however, with a notable quantity

FINIS.



GENERAL VIEW

OF THE

AGRICULTURE

OF THE

COUNTY OF GLAMORG

GENERAL VIEW

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AGRICULTURE

OF THE

COUNTY OF GLAMORG

WITH

OBSERVATIONS ON THE MEANS OF ITS IMPROVEM

BY MR. JOHN FOX.

Gt. Brit. DRAWN UP FOR THE CONSIDERATION OF

THE BOARD OF AGRICULTURE AND INTERNAL IMPROV

LONDON:

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[ENTERED AT STATIONERS' HALL.]

S455
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TO THE READER.

IT is requested that this paper may be returned to the B
Agriculture, at its Office in London, with any additional Remarks and O
tions which may occur on the perusal, written on the Margin, *as soon as*
convenient.

It is hardly necessary to add, that the Board does not conside
responsible for any fact or observation contained in this Report, which, at
is printed and circulated, for the purpose merely of procuring farther infor
respecting the Husbandry of this District, and of enabling every one to co
his mite to the improvement of the country.

The Board has adopted the same plan in regard to all the othe
ties in the United Kingdom; and will be happy to give every assistanc
power, to any person who may be desirous of improving his breed of
Sheep, &c. or of trying any useful Experiment in Husbandry.

London, April, 1796.

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OUNTY OF GLAMORGAN.

INTRODUCTION.

HIS is a maritime county, in the province of Canter-
bury, and dioceses of Llandaff and St. David's. It is
oned 50 miles long, 24 broad, and 145 in circumfer-
; containing 660 square miles, or about 422,400 acres.
bounded by the Severn sea on the South, by Brecknock-
on the North, by Monmouthshire on the East, and by
narthenshire on the West.

he county is divided into ten hundreds, having one hun-
and eighteen parishes, one city, Llandaff (which is the
f a bishop), and nine market towns, though there are
contributary boroughs; that is to say, Cardiff, the capi-
orough (which sends one member to Parliament, and
the title of baron to the family of STUART, now Mar-
of BUTE, the owner of the fine old castle there, that has
repaired, and fitted up as a handsome residence, at a
expence, by the present Marquis), Swansea, called in
sh, Abertawe, Neath, Bridgend, Caer-philli, Llan-
nt, Cowbridge, Mirthyr Tidfil, and Aberavon, which
last places, have of late years regular markets, from
ron and copper works established near them; these
brought from different parts of the country such num-
of workmen and their families, as to create a consump-
of great quantities of the necessaries of life, and cause a
ic market once a week.

This

This county sends two members to Parliament, one of which is for the county, and one as before-mentioned. It provides 360 men for the national militia.

GENERAL FACE OF THE COUNTY.

THE northern part is rough, with mountains, which, as they decline southward, gradually grow more improvable, at whose foot a plain extends, open to the south sun in such a situation as CATO preferred to all others, and for which PLINY so much commends Italy. For this is the richest part of the county, and is thick set with towns.

RIVERS.

THE principal within this county, are the Taff, Rumney, Ogmore, Avon, Clydach, and Tawey. The Taff arises out of the mountains, pursues its course by Llandaff, and enters into the sea four miles below Cardiff. The river Rumney, or Remny, also arises out of the mountains: it is the eastern boundary dividing this county from Monmouthshire; it passes near to Caer-philli, and enters into the sea. It derives its name from the British word *remni*, to divide. The river Ogmore arises out of the mountains by Cortie, passes near Newton, and enters into the sea. The Avon, Clydach, and Tawey, also arise out of the mountains, and discharge themselves into the sea at the following places: the Avon, near Aberavon; the Clydach, near Neath; and the Tawey at Swansea.

NATURAL PRODUCE.

eat number of excellent horned cattle, horses, sheep, mber, coppice woods (except near the sea, where sterly winds prevent their growth), pit-coal, culm, iron ores in vast plenty, with some veins of gypsum marl.

TRADE.

NG to the contiguity of this county to the ocean, it ds a considerable portion of commerce, the principal which is Swansea, called by the Welch, Abertawe, being built at the mouth of the river Tawe (aber Welch for mouth); a pleasant, maritime, and very ng town, and at this time, in point of tonnage enter- the port (according to the Custom-house books), xceeds that of Bristol, occasioned by the extensive s opened within the distance of one to three miles nd which, from the cheapness of the coal afforded ence, has induced several opulent persons to build or the smelting of copper ore, &c.

town is situated near the centre of a most beautiful ween two hills, which defend it from the N. W. to E. The southerly winds blowing over a vast ex- sea, renders the air mild, and the soil being rather gravelly, makes it a pleasant and healthy situation. adjoining country is truly rich and picturesque, and rts of the lands capable of great improvement. At the country furnishes a great variety of delightful d walks. Much company resort to this beautiful during the bathing season, there being some very hines, an assembly-room for the accommodation of

the company, and a plentiful supply of butchers meat, fish, fowl, &c.

Corn and hay have been scarce; the slow progress made by the farmers (particularly upon old leases) being such, that there is not at present enough grain grown for the consumption of the inhabitants of that town and neighbourhood, which is become very populous; but large supplies have been drawn from other counties, and from England. The high price of provisions, and the apprehension of again experiencing the distress which had been felt in some parts, induced the principal gentlemen of this district of the county, to meet during the severe season, when they very laudably subscribed 1300l. as a fund to buy corn to bring into Swansea, thereby to keep down the price, and supply the poor at a moderate rate. By this means, plenty has been preserved, and peaceful confidence continued. This town has increased much during the last twenty years, and is supposed to contain now between six and seven thousand people.

The coals exported from hence in 1793, amounted to above 100,000 chaldrons; but since the war, the export has declined considerably. The consumption of coal in the copper-works, is supposed to be not less than 55,000 chaldrons annually. The chaldron is reckoned 36 bushels. This seaport has always been a place of some trade, which furnished frequent intercourse with London and Bristol, Cornwall and Ireland; and of late years, has partook of some foreign trade, to the Baltic and West Indies. From the immense mines of coal, lime, and iron stone, in the neighbourhood, a great number of manufactories in iron, copper, brass, spelter, tin, &c. have been erected on the banks of the Tawey, and lately, a large extensive brewery and a dry dock. There is likewise near the town, a pottery, carried on with great spirit, in which they now make earthen ware little inferior to that of Mr. WEDGEWOOD. There is also an iron foundry. Shipbuilding is also carried on, but not to so great an extent as it

rmerly, when wood was more plenty, or as it will be
wood can be brought down the canal that is making
een miles up into the country. There are two roperies,
salt work; the latter unfortunately remains idle, from
disagreement that has arisen between the parties interest-
ho reside at Liverpool.

ry few places in this kingdom have had so rapid an in-
of trade as Swansea; for from the Custom-house
it appears, that in the year 1768, there entered 694
; in 1790, 1697; in 1791, 1803; in 1792, 1828;
1793, 2028; and that the tonnage had increased from
1 to 120,852 tons, register measure. The harbour
ry safe one, but a serious evil exists, which the spirit
he individuals has adopted a plan to remove. It is this:
of sand obstructed the entrance of the river, so that
drawing ten feet water, could only enter it at spring
but an Act of Parliament has been obtained, to enable
es to remove the bar, by which, (under the direction of
e engineer, Capt. HUDDART), the same will be done,
essels of 200 tons burden will have water to sail in and
the river every day in the year.

ere are seven considerable copper-houses built on this
where about 35,000 tons of copper ore are smelted an-
. The copper ore is principally brought from Corn-
(and a small quantity of it from Anglesea), and coals
d back in the same vessels, to supply the fire engines, &c.

CLIMATE.

HE northern mountainous parts are very bleak and cold;
the south, towards the sea, where the country is more
it is mild, and remarkably fertile. The breezes arising
he ocean, cool the gleam of summer, and the moun-

tains before mentioned, shield the lands in a southern situation from the northern winds. So that the summer is generally genial, not sultry; and the winter is without that inclemency inseparable from less favoured districts. A vast deal of rain generally falls upon this county, in consequence, it is presumed, of its vicinity to the sea.

PLACES OF NOTE.

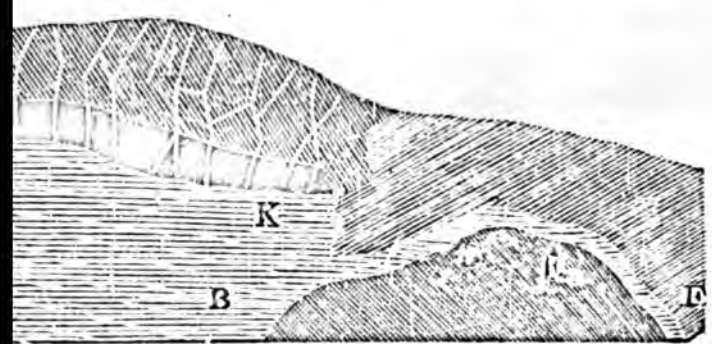
THERE are several ancient monuments in this county, imputed to the Romans and Britons: the old Abbey and Chapter House of Margam, are very striking, and peculiar; and on the coast, are Scilly isle, Barry isle, and Scasker isle, with Breaksea point, Nash point, the Mumble's point, Swansea bay, Caswell bay, Penarth point, Oxwich point, Port Inon point, Wormshead, and Whitford point; the ruins of the ancient and venerable Abbey of Neath, with many castles in different parts of the county, and along the coast.

There is a warm spring, called Tave Weil; and at Swansea a mineral spring, besides others of less note. At Newton, on the west bank of the river Ogmore, about 100 paces from the shore of the Severn, in a sandy plain, is a spring, not of the clearest water, but tolerably pure, and fit for use. It never runs over, but you go down some steps to the well. In spring tides in summer time, you can scarce take up a dishfull of water; but when the tide is out, there is enough to fill a large vessel. The same uncertainty continues in winter, but far less visible, by reason of the adventitious supplies of rain, and other causes. The tide being in the Severn, without any body coming to carry away the water, it sunk about three inches; soon after, it rose a foot. The lower diameter of the spring, within the walls, is six feet

. POLYBIUS mentions such a spring at Gades, and this solution of it—"that the wind wanting its usual vent, ns inward, and stopping up the passages of the spring, nes the water; that afterwards, the water quitting the ce, the spring is no longer obstructed, and then the water up plentifully."

ssibly this phenomenon may be caused by the spring per- ing through a channel, in the form of a syphon. Since idea entered the writer's mind, he has referred to MS' lectures on natural philosophy, for information. thence he has not only received satisfaction on this ct, but also a general principle, that he hopes may be successfully applied to the purposes of *draining*; he fore thinks it his duty, accurately to detail the passage that intelligent author, by whom he has been so use- instructed.

The syphon affords a very probable solution of the nature *termitting springs*, which I must illustrate by a diagram.



Let H H K B, represent a cavity in the bowels of a ntain, from the bottom of which proceeds the irregular y B D E F, forming a syphon. Now, if by means of springs, or any other cause, this cavity begins to fill, vater will at the same time rise in the leg of the syphon vity, till it has attained the horizontal level, when it will

will begin to flow out by means of the leg D E F, and will continue to rise, and increase in the quantity discharged, as the water rises higher, till at length the syphon will pour out a full stream, and thus empty the cavity. The stream will now cease till the cavity fills again, when it will exhibit the same appearance; and these periodical returns of flood and cessation will be regular, if the filling of the cavity be so; but the intervals of the return must depend on the dimensions of the cavity, and many other circumstances. Many instances of this kind occur in nature. At Gravesend, there is said to be a pond, out of which the water ebbs all the time the tide is coming into the adjacent river, and flows during the time that the tide is going out. This appearance probably arises from a subterraneous reservoir, equal in capacity to the quantity of water that rises and falls in the pond: between this reservoir and the pond there may be a natural syphon, by which they communicate with each other, and act as we have already explained; and a second natural syphon may in the same manner convey the water away from the pond, when it is filled to a certain height."—*Adams' Lectures on Natural Philosophy*, vol. 1, p. 96, 97.

It seems, therefore, that the syphon may in many cases be effectually applied to drain lands, and that it may also prove particularly useful for the purposes of irrigation. For wherever pits, locks, lakes, or other depositaries of water, are to be drained, the syphon seems not only the easiest, but also the least expensive mode of draining; and in various cases, it may be made to irrigate some lands, while it drains others.

SOIL.

HIS, for a vast extent, upon the mountains for many
, and near them, is principally of a black peaty kind;
gh generally very barren, as much so at present, as per-
any in the kingdom, yet it is capable of great improve-
, and interspersed with fruitful vallies, that afford tolera-
ood pasture for cattle, sheep, and some few goats; as
small horses: while the southern part, being more level,
rich good soil, admits of being highly cultivated, and
ces large crops of grain, hay, and remarkable sweet
, turnips, rape, &c.

hat part called the Vale of Glamorgan, and that beauti-
xtensive one adjoining, deemed a part of it, viewed from
minence near the summer-house erected by the family
e late Sir EDMUND THOMAS, a little upon the right
of the turnpike road near Winvoe Castle, about five
s from Cardiff, in the way to Cowbridge, commands a
ect of a wonderful large fine tract of land, partly culti-
, and part divided into fine fertile pastures, delightful
hold; and affording large crops of corn, with abundance
ay, as well as exceeding rich pasture, to numerous
s and herds of sheep and cattle, that are bred, and
d, on that beautiful and delightful spot. This part,
d, I may say, is in general so fruitful, pleasant, and
lous, that it is called (and that too, I think, very de-
dly) the *garden of South Wales*, as the Vale of Cluid is
oned to be that of North Wales.

he soil in this part, is in general, of a fruitful loam; but
e parts lying down towards the sea, it is inclining more
rich clay. From the hill before recited, coming from
liff, there is a strata of excellent lime-stone, running
east and west, through the whole Vale, for about
y miles, as far as Pyle, only a little below this kindly

soil. This useful manure of lime, from its plenty and contiguity, is had at so easy an expence (nine heaped bushels being to be purchased in some places for a shilling), that it may be ascribed to the negligence of the farmer, if he does not obtain good crops. But it is observable, that as plenty is apt to produce waste, in many instances, there is reason to believe they proceed too far in the use of this excellent manure of lime, depending upon this alone, and not considering (perhaps from a want of knowing it) that too much of a calcareous substance spread upon soil of that nature, as well as most others, may prove injurious, unless there is a proper proportion of the oliagenous matter (as dung, &c.) used with it. Land highly limed, will certainly bring a crop or two of corn; but if there is not some dung also used, the land, by repeated white crops, will get exhausted, so that when laid down, it will not produce much herbage; and if kept in tillage, and continued to be cropped year after year (as is often the case with unskilful and poor farmers) it is worn out, so as not to recover itself for a number of years to come.

Several veins of lead have been found among the lime-stone. Many of the mountains and hills are found to abound in iron ore, with plenty of fine coal of excellent quality. That lying in a range next bordering on the lime-stone, is a strong burning large coal, very useful for general purposes, and for smelting of copper, from whence a number of these works have been erected in this county. And beyond this sort of coal, more to the northward, there are veins of the stone coal found, of great magnitude, many feet thick in the sides of the hills, without sinking at all; and canals have been forming, and are still carrying on, at a very considerable expence, to bring down this useful necessary of life, as well as the iron ores, and iron made from them, to the sea coast. The coals, in many places, are found in the sides of the hills in strata, several feet thick, and are brought down, some of them being almost close to the canals, at so easy an expence,

ence, that immense quantities are shipped off to different
s of Europe, as France, Spain, Portugal, &c. and also
Cornwall; and the vessels return with copper ore, to be
lted, in situations near where the coal is raised. Besides,
quantities are shipped off to Dublin, and many other
s of Ireland. A great deal of the stone coal is shipped off
London, for drying of malt, to send into Surrey, Herts,
ks, and other malting counties, as it burns quite clear,
out any sulphur or smoke.

DOMAINS.

THE principal ones in this county, are those of the Right
n. Lord VERNON, at Bretton Ferry, and that of THO.
NSELL TALBOT, Esq. of Margam, both which pro-
ies of lands are contiguous to the main road, and extend
n the delightful vale where they are situated, up to the
ntains. These estates formerly belonged to Lord MAN-
L and his ancestors, who purchased them from King
NRY the Eighth, being the famous Abbey of Margam,
lands pertaining to it.

The noble Castle of Cardiff, belonging to the Marquis of
E, Custos Rotulorum of the county, &c.

That of the Right Hon. the Earl of PLYMOUTH.

That of CHARLES EDWIN, Esq. of Llanwihangle, and
of his son.

The seat of THOMAS WYNDHAM, Esq. M. P. for the
nty, at Dunraven Castle, near the sea.

That of the late ROBERT JONES, Esq. at Fonmon Castle;
DRAKE TURWITT, Esq. of St. Dennis Castle; the late
EDMUND THOMAS, Winvoe Castle, since of PETER
RTS, Esq.; the seat of THOMAS MATHEWS, Esq. (late
iral MATHEWS) of Llandaff; that of JOHN LEWEL-

LIN, Esq. at Pentlevir, and Enys y Gerran; that of JOHN MORRIS, Esq. of Clasemont, near Swansea; together with that beautiful and elegant seat of the MACKWORTH family, at Gnoll Castle, near Neath, so much improved by the late Sir HERBERT MACKWORTH, Bart. by its numerous plantations, &c. up to the mountains. The estates of these proprietors, with those of many others of great respectability, are equally ornamental and useful to the country, and afford such specimens of good husbandry, as would do credit to the most improved part of the kingdom.

OCCUPATION.

MANY proprietors farm the whole, or considerable portions of their estates; there are, nevertheless, a numerous tenantry, some of whom hold their farms at will, some upon leases, and others upon lives. The first of these tenures is inimical to improvement: no man likes to lay the foundation of improvements, when caprice may prevent his raising a superstructure thereon, or banish him from it when it is compleated. The second, is the true tenure for mutually promoting the interests of landlord and tenant. Leases, by giving an interest sufficiently durable to reward industry, naturally incite this principle; and by plainly pointing out in equitable covenants, the path of duty, go a great way to secure the tenant's attachment to it. Progressive improvement in the estates so held, is therefore generally, and ought always to be, the consequence of this tenure. The tenant looking to that period when his interest is to conclude, anxiously endeavours so to improve his trust, as to gain a renewal of his term: this, the liberal landlord without hesitation grants, knowing that an improving tenant, while he punctually pays his annual rent, is at the same time annually increasing the

of the fee-simple of the estate. The proportion of in
d rent upon each renewal, may be always fairly gradu
y the improved value of the fee-simple, with certain
ction to the landlord, and without the least injustice to
nant.

e third tenure, for lives, appears to be particularly
ionable; on principle, and on account of the miserable
t that many of the estates thus held, bear in this county.
ms to be as much too confidential, as the tenure at
is too transitory. There is no rule given for cultiva-
nor in many cases any other sought after, or practised,
what will secure the tenant's mere maintenance. He
sight of that relation which he bears to surrounding
y, and which is so happily promoted by leases for terms
rs. Secure in his possession, he grows indolent in the
ment of it, and by failing to cultivate his trust, nega-
injures society, and impairs the interest of his suc-
r.

SIZE OF FARMS.

HERE is a great variety in this respect, in the different
of the county, there being some lett so low as five
ls per annum, and from thence rising to one, two,
ven as high as five hundred pounds per annum; but
are few of the latter description. One farmer in the
, is supposed to hold 800l. per annum; and one pro-
r, who I may call one of the first improvers in South
s, holds at present about two thousand acres of land, a
part of which he has the merit and satisfaction of having
lf reclaimed from barrenness, and now occupies in a
ior style of cultivation; thus holding out to his neigh-
, and indeed to the whole kingdom, an example well

worthy of their imitation. The farms throughout this county, are generally small, mostly under fifty pounds a year, and in many cases, a great number of acres are held for much less per annum than this sum.

There are farms of great extent in the mountainous parts, which are lett at very low rents; many of them upon leases for lives. Much of this land lies in an uncultivated state, particularly where the farm is held by *one old life*. It is mostly grazed between the large patches of furze, bushes, and fern, by their mountainous sheep, and small cattle, with some horses, chiefly of the poney kind.

EMPLOYMENT OF LAND.

More of it is appropriated to pasture, than seems to be consistent with the true interest of the county; hence the necessity for applying abroad for that grain, which a more equal distribution of their land to husbandry and grazing, would constantly supply. There is some reason certainly for this preference to grazing, when it is considered how famed this district is for its breed of cattle. The surface damage done to other large portions of land, in working mines of coal and iron ore, is also another reason that impedes the operations of husbandry; but no considerations, however lucrative, or alluring, should divert the attention from such an extensive culture of corn as will be sufficient for the exigencies of every district, and somewhat more, for the casual supply of neighbouring wants. This culture being the principal stay of life, every industrious exertion should be practised to preserve, and prudently extend it.

CULTIVATION OF GRASSES.

OVER, trefoil, rye-grass and sainfoin, are cultivated, no considerable extent. The latter is a valuable addi- every farm, and when drilled, produces a very luxuri- p, a single plant often producing half a pound of hay dry. It is excellent food for cows, and considerably es their milk. March and the beginning of April, best seasons for sowing it, as the severity of win- d the drought of summer, are equally unfavourable to ung plants. The improvement of the native herbage ry district, should be particularly attended to, by hus- g seeds from the best grounds, and sowing them on ess fertile. It is not always the most luxuriant looking that turns out the most profitable, or that will be the ed by cattle. They give you a correct criterion of ture of pasture, by their conduct when first turned out e field: if the pasture be choice, they begin at once to if the pasture be in part not good, they blow upon l traverse the field till they find the sweetest herbage. e grass-seeds cannot easily be obtained for the improve- f pasture, certain manures in some degree will answer rpose. Land manured with marl, will in the second fter, produce plenty of white clover grass. Soapers' will also produce the like effect. So the feeding of on one sort of grass, will, from their manure, produce grasses, and fine that whereon they are fed. Where are fed on burnet, the ground fills with the natural , which improves the pasture, and makes it very sweet, uch, that the sheep will leave the burnet to feed on the . An approved mode of laying down lands to grass, is, ten pounds of white clover, and ten bushels of York- hay-seeds, to an acre: the London price of the former shilling per pound, and that of the latter two shillings pence per bushel.

SPECIES

SPECIES OF STOCK.

THIS county is plentifully supplied with horned cattle, horses, sheep, and pigs. The breed of cows is particularly beautiful; they give much milk, and quickly fatten. In general, they are rather small, of slight bone, of a bright brown, and frequently black colour; are short in the legs, and handsome in every point. The horses bred in this district, are active, safe and hardy. The sheep are small, healthy, and afford excellent wool. That the breeds of cattle, horses, and sheep, cannot be further improved, I will not presume to say, as progression to perfection is infinite; but I feel no scruple in declaring, that the native good qualities of each species, are such as to need no aid beyond what the county affords, to continue the course of improvement that is every year advancing.

The pigs bred in this district are chiefly of the china sort: there is perhaps no stock a farmer keeps, that is more profitable than this. A litter of eight or ten pigs, reared and fattened within a twelvemonth, will bring a sum far surpassing what can be obtained for the produce of any other species of stock, at one time, and within the like period. Much benefit might be derived to this county, it is presumed, by curing this food for the supply of the numerous shipping that frequent Swansea, Neath, and Cardiff.

POULTRY.

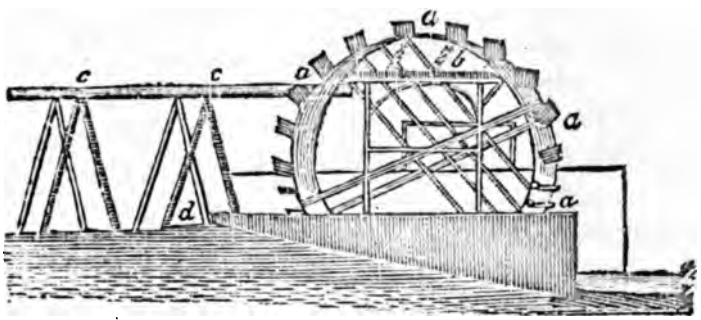
THE breed of this article of food, is not encouraged as much as it ought to be. Wherever poultry abounds, its influence is considerable in keeping down the price of butchers' meat; and this seems to be an object of great consequence at this period.

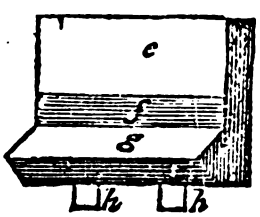
WATERING OF LAND,

ot practised to any great extent; not owing to the in-
y of the land for receiving this improvement, but ra-
is apprehended, owing to the virtue of the practice
ng more generally known. Large tracts of land lying
rivers and brooks dispersed throughout this county,
capable of this improvement, and very frequently
t be effected at a small expence, by the skilful ma-
nt of copious springs. In this art, as in all others,
should be our guide. We should accurately observe
periods when the rivers and brooks overflow the ad-
meadows; how long the water rests thereon; how of-
effect occurs in each year; how far the periods of the
verflowing agree, when one year is compared with
; and *what effect is produced by each natural irrigation.*
on to these circumstances, would furnish some rules
ncing this practice to a state of perfection, as certain
rring as the *source* from whence they would be drawn.
re land lays so high above the level of the stream, as
dmit of its being irrigated without adventitious aid,
sian wheel is well adapted to furnish such land with
provement; of which Mr. WORLIDGE, in treating
ows, gives the following description—" This wheel
much after the manner of that of an undershot mill,
th a double ring, into which are let two pins, on
the floats are fastened; these floats are made hollow;
that is most remote from the wheel, holds the water
s taken in at the open place, above the middle of the
the float; and as the wheel goes round, and the float
ith water rises, so the water by degrees tends towards
t of the float which is next the wheel; and as the
mounts the cistern or receiver, the water empties it-
it, every float succeeding the one the other, emptying
itself

itself into the receiver; so that if one float contain a gallon of water, and there be thirty floats on the wheel, at one motion round it delivers thirty gallons of water into the cistern. Such a wheel will be about fifteen feet in diameter, the floats at eighteen inches distance, and will deliver the water at eleven or twelve feet above the level of your stream; and will go four times round in one minute, and carry up about an hundred and twenty hogsheads of water in an hour, with twelve or eighteen inches penning or stopping of but an ordinary current of water, which will water very well thirty or forty acres of land; for if your land be cold and clayey, too much water does it hurt; and if it be light, warm, or sandy, a little water does it much good It is also to be observed, that this motion is constant, and will last many years without repair, so that it stand not still, the one side drying and waxing lighter than the other; also observe, that the slower it moves, the better it delivers the water.

" The view of this wheel is below delineated."





a, a, signify the wheel; b, the cistern that receives
ter; c, c, the troughs standing on tressels, that convey
ter from the cistern to the place you desire; d, the
or penstock, that bays up the water to a reasonable
under which the water drives the wheel; e, one of
ts presented to your eye, apart from the wheel; f, the
ace that is to receive the water; g, the open place out
h the water issues; h, h, the two pins, or ledges,
on to the foreside of the float, and wherewith you are
e float to the two rings of the wheel.'

description of this machine is as complimentary to
ORLIDGE for its clearness, as the work from whence
en is to that author, for its perspicuity and utility.

Persian wheel, it is submitted, might be so formed
t in working a mill, as well as for the purpose of ir-
.

tual as this machine is for the purpose of irrigation,
prising that it has been so little used. But without
atronage, it is the common lot of improvements, how-
cellent, to be neglected. This, however, it is trusted
happen in future; as a Board of Agriculture is esta-
it is to be hoped that all inventions of utility in this
will be communicated to them, as they will certainly
consideration from that respectable body, and pa-
, if of real service.

WHAT GRAINS ARE CULTIVATED.

EAT, barley, and oats, are the grains chiefly cultivat-
he following account respecting the cultute of wheat
ley, which I received from one of the first improving
in the county, will shew that the most striking disad-
s of barrenness are no obstacles, but rather incentives

to well regulated industry and judgment. A piece of ground containing near thirty acres (which had formerly been divided into eleven closes), consisting of loam, clay, and full of large stones, roots of trees, and bogs, was thus treated: the intermediate fences were removed, a deep ditch sunk round the boundary fence, drains cut in all the wet spots, and carefully filled with the above-mentioned stones, by skilful masons; such part as had never been ploughed (and was overgrown with rushes, fern, and furze), were burnt, and the whole dressed with lime, after the rate of eight chaldrons per acre, each containing thirty-six bushels, that is, two hundred and eighty-eight bushels per acre; the dry loamy part was well dunged; the peat carried on the clay, and *vice versa*, the clay on the peat; and sown in an early season with wheat, at the expence (all charges included, viz. of lime, dung, burning, draining, ploughing, grubbing of hedges, and seed) of 17l. per acre. The first year's produce was one thousand and eighty bushels of wheat from about ninety bushels sown broad cast, which sold for about 324l. The next year, the same land was sown with barley, and the crop produced nine hundred and sixty bushels, which sold for 146l.; with this crop, clover and rye-grass were sown; and a farmer in the neighbourhood, who would not before have given four shillings an acre for this ground, offered to take a lease of it for twenty-one years, at twenty shillings an acre, and to pay all taxes, according to the custom of this part of the country. From this account, we learn that no expence, in a reasonable way, is hardly too great to pay for the cultivation of neglected lands, in situations where the produce will bear a good price.

DRILLING AND DIBBLING.

THE culture of grain by drilling, or dibbling, cannot be trongly recommended. The saving of the seed is an ob- of great importance at all times, and particularly when n is not so plentiful as it has been. Upon a moderate ulation that I have made, of the saving of seed, and the rior increase of the drilled and dibbled crops throughout nited kingdom, it might make to the amazing amount *n millions five hundred thousand pounds a year extra produce* n the various crops of grain.

This calculation is proved to me by my own experiments, ough made but upon a small scale (which nevertheless have given more distinct data to my apprehension), and observation that I have made on the progress of this d improvement for some years past. It will not appear ggerated, when it is considered that at least ten shillings cre in seed and in the extra produce, are saved by the dril- system. To me it seems to be one of the first objects ought to receive attention for promoting plenty of grain. ay be worthy the consideration of government, how far ay be eligible to encourage *dibbling by premiums, and ing, by reducing the price of the machines.* The latter ht be effected by buying out Mr. COOKE's patent, and ng his drill machine made in every part of the kingdom re they can be made cheapest. In the manufacturing ties of Warwickshire, Staffordshire, &c. they might ent by the canals to most parts of the kingdom, at a small ence. At present, they are made in the dearest place, the freight, added to the original cost, to this and other es far distant from the metropolis, so enhance the expence, deter many from purchasing them, who, if they were per, would be disposed to adopt this course of culture. ight also extend the use of this machine, if the Board of

Agriculture was to recommend to the respective Agricultural Societies throughout the united kingdom, to bestow drill machines as premiums of honour for extraordinary exertions in husbandry.

PULSE.

BEANS, pease and vetches, form a part of the culture of this district, and are frequently very judiciously introduced as ameliorating crops alternately with grain; but hitherto, it has not been determined with sufficient accuracy to support a general system, how far any particular pulse or green crop, interveniently used with white crops, is so superior to others, as to give it the preference upon principle. The following mode may possibly throw light upon this inquiry, and form the result into system. Divide a ground into four parts, and sow in distinct spaces, beans, pease, vetches and turnips: as the respective crops of each are cleared, prepare the whole ground to receive one crop of grain, and attentively observe the comparative produce of it, from the four portions of land. This trial upon various soils, and with the addition of other green crops, will afford some satisfactory rules to the intelligent agriculturist.

TURNIPS,

ARE found, when compared with hay, to be worth about six shillings a ton; a common crop is about twenty tons per acre, often thirty tons. The former, therefore, would make each acre worth from 6l. to 9l. This culture is recommended by their ameliorating quality, and the excellent food that they furnish for cattle and sheep, particularly ewes and

Another advantage results, from the manure deposited
land by the sheep folded thereon. The *flat turnip* will
dure severe frost; but the *turnip rooted cabbage*, the
h turnip, or roota baga, and the *tankard turnip*, are proof
it. It is a good practice to draw turnips before the
s in, that they may be stacked, and dealt out as want-
n the land during the severity of the winter. They
en with less waste when cut into quarters, and put
kes for the sheep.

ROTATION OF CROPS.

EY are very various throughout this county, and con-
in many instances with much credit to the agricultu-
Rather than attempt to detail the different rotations, I
ought it better to combine such a one from all, as will
ly to meet the general approbation of the respective
rs; be most profitable to them, and that will be most
o produce plenty to the nation. I shall submit it with
ce to the public opinion, and with the hope, that those
ous individuals to whom it is more particularly offer-
rule, will consider it with that freedom of judgment,
enlarges the sphere of knowledge, and correct it
er they may conceive it not fully answerable to the
erests of their county.

all lands that want it, be broke up this year pretty
nd sow oats as soon as convenient at one ploughing,
ed in.

n the stubbles of oats, barley, and wheat, of the past
795, or upon light lands intended for fallow in this
796, let pease be drilled in early, in rows, at eighteen
nty inches apart; or upon stiff lands, beans (the small
nd seems to merit the preference), drilled, or dibbled:

if

if drilled, the saving of the seed will be great; if dibbled, still greater; and will furnish a great deal of employment for poor women and children; so as to help those who have large families to a support, now provisions are at so high a price.

Let pease and beans be both hoed twice; the last time, by the moulding-board, to throw up the earth to the root of the plants. This will increase the crop, and clean the land from weeds. The pease, if an early sort, may be ripe to come off in June or July. As soon as this is done, let the land be directly ploughed, and dragged with harrows or couch rake, so as to gather out all the couch, and the roots of other weeds: all these should be put into heaps, and burnt. Spread the ashes, and make furrows two and a half to three feet apart, into which put some wet horse or cow dung, with the wet litter taken out of the stable, or farm-yard; upon which, in the furrows, let the sets of potatoes be dropped, at about eight inches apart, and let them be covered up on both sides with the plough. When they come up, let them be hoed, once, or twice, with a small plough; the last time by the moulding-board, throwing up the earth quite to the root of the plants. Let the weeds also be taken off between the rows of the plants by women and children, at the last time of hoeing, so as to make a perfect clean fallow. These potatoes, I judge, from an experiment I made last year (which were set so late as about the middle of July), will be a plentiful good crop, and of a large size, by October, or early in November 1796, when they may be taken out by the plough.

Thus will two very beneficial crops be obtained in the course of the present year; and the land, by being cross-ploughed and harrowed, will be brought into the finest order for barley in the ensuing spring; or if the weather may happen to suit to drill, or dibble, upon a part of the land, some white Dantzick, or cone wheat, in the month of March, so as to be ripe in autumn 1797; so that in two years, there

be three valuable crops. If barley is sown in the spring, clover with it, the barley will be a most useful crop of , and the clover may be cut twice in 1798. Then wheat be sown, or dibbled on clover ley, so as to produce a crop 99. The stubble being broke up, and turnips directly , will be spring food in 1800. Besides, a crop of barley, l after turnips are eaten off, make another crop, with -seeds to lay down. Thus there may be obtained eight in five years, or nine crops in six years; and the land y be greatly improved, instead of being run out. Be- n the rows of beans, turnips may be drilled the last time eing them, to great advantage.

nother mode, probably equally good, will produce twelve in eight years.

Suppose oats, or any white crop during the past year 1795
Let pease, or beans, be put upon the stubble, and after, potatoes upon the former, and turnips upon the latter, will be two crops in 1796
Then barley in the spring, or the white or cone wheat, drilled or dibbled 1797
After this wheat mowed close, sow turnips to eat off in spring: upon this land, so well prepared, sow barley; makes two crops in 1798
If clover is sowed with barley, cut twice in 1799
Upon clover ley, drill or dibble wheat, for a crop in 1800.

To proceed; break up wheat stubble as soon as mowed, and sow winter vetches for spring food, which will be off in time to sow turnips, or plant potatoes in 1801.
Sow barley with grass-seeds, so as to lay down in 1802

By

By this course of culture, the land will be well cleaned and improved, instead of being worn out and exhausted by repeated white crops. Good crops of grass will be produced by land so cultured, for several years after the rotation recommended expires. Oats seem justly to have the first station in a course of culture to be pursued on lands newly broken up: it is a hardy grain, affords a profitable crop, and its straw furnishes good food for cattle.

The adoption of the rotation previously suggested, will considerably augment the quantity of grain, and consequently reduce its price.

GREEN CROPS.

THE more frequent introduction of these crops, is certainly among the first improvements in modern agriculture. They fertilize and cleanse the land, and contribute much to the health of stock, by affording them a change of diet. In addition to those already mentioned to be grown in this county, I must notice the growth of the Mangell Worzell root, rape, and cabbages. The farm of JOHN FRANKLYN, Esq. of Lannihangle, affords a fine specimen of the growth of the Mangell Worzell: he obtains twenty-five tons from an acre; many of the roots weigh twenty-two pounds. This gentleman gives a valuable piece of information respecting the culture of the Mangell Worzell, which is, that *he has never found in any season, that any insects injured either the root or leaf of this plant.* To prevent the want of winter and spring keep, Mr. FRANKLYN recommends, and enforces by his practice, cabbage seed to be sown in autumn, potatoes and Mangell Worzell in April, and rape and turnips at Midsummer. As it is advantageous to cultivate a variety of green crops, particularly on spacious farms, I shall recommend the culture

re of a few, that I hope will be found of great service. *Anjou cabbage* is superior to any other; it grows fast, s the most severe winter, and produces a succession of sprouts in the spring; and after repeated gatherings, give a great quantity of seed. Cattle like this plant, and e upon it.

rrots afford a fine food for cattle and sheep, horses and Four pounds of seed will sow an acre broadcast, but ng is the best mode of sowing it, as the seed, from its ness, and being very small, is difficult to separate, and dis- equally on the ground: when drilled, little more than the quantity of seed will be sufficient. This mode is preferable, on account of giving space to hoe the carrots ey advance in growth. The profit annexed to this cul- is very great.

tch kail is another plant of much virtue: it is luxuriant growth, is not injured by frosts, possesses a very nutri- quality, and is much liked by cattle and sheep.

inese vetches produce four crops in a year, of excellent for cattle; they grow erect in tufts from eighteen inches o feet high.

he growth of *parsley* for sheep, is a culture that would y repay every attention that could be paid to it. Part of it be fed when young, and the remainder left to run to seed, it may be cut, and stacked for winter use. The pro- y of giving such warm diet to sheep in that season, will r evident, if we reflect on the nature of the food of our in wet weather, and during the cold winter months. ful attention should be paid to the culture of those plants experience has proved to be particularly beneficial to als. The *narrow leaf'd plantain*, or *ribwort*, and the *on yarrow*, or *milfoil*, are much liked by sheep, and by tap roots, they are fitted to retain their verdure, when es which have fibrous roots are burnt up. The milfoil ms and retains its vigour on dry banks, in the driest wea-

ther, which seems to shew that its leaf attracts nourishment from the air.

FALLOWING,

Is but little practised, and will soon entirely give way to the valuable improvement of constant cultivation. Nature gives us an unerring rule on this subject—she shews us that there is no inaction in her laws—All constantly work together for the general good. If fallows are not prepared to bring forth fruit, weeds will be produced by them during their neglected state. Surely then we should profit by this instruction, and become equally anxious to cultivate the soil entrusted to us, as we are to strengthen our habits of social virtue. So essential does the culture of land accustomed to lay in fallow in various parts of the kingdom, appear at the present period, that it seems to be an object well worthy the consideration of the legislature, how far it may be prudent to interdict fallowing, as the admonitions of reason are found insufficient wholly to prevent it. The appropriation of such land to the growth of corn, would speedily obviate all apprehension of exigency at home, and furnish us with a surplus sufficient to restore to a level the balance of trade, that in this article preponderates so materially against us with respect to foreign nations.

Such interference could not justly be esteemed harsh, as the consequence of it would be salutary to all who were obedient to it, by substituting industry in place of indolence, plenty for scarcity, and riches for poverty.

MANURES.

ose principally used in this county, are lime, marl, mpost from the farm-yard. Lime, from the abundant eap supply that this district affords, is used frequently ss, so as to form in some degree a new separate strata, of a perfect union with the soil which it is intended lize. Wherever this is the case, the intention is en- efeated, and the lime renders the soil more barren than before this manure was introduced upon it. Modera- a principle of universal utility, whose governance unerringly to progressive improvement. It teaches us r the aid of manure may be serviceable to land, and us the point where it ceases to be useful. This point ith certainty be thus discovered: let a piece of ground ded into six, or more parts; manure one part with ushels of lime, or any other quantity deemed more o form a better origin for the course of manure I am o prescribe; and let the quantity of lime to be deposited other parts, increase in the regular progression of three bushels per acre: let the whole be sown with one grain, and let an accurate account be taken of the ative produce from the respective divisions. From the quantity of manure most congenial to the nature land, will be discovered, and a rule established, to the use of it in respect to future culture.

qualities of lime are found to be superior to every pecies of manure, as it not only sweetens the soil, and s and neutralizes that mineral acid that in many places es the earth, but it also guards vegetation from the s of the fly and grub.

l is plentifully dispersed in various parts of the county. cacy as a manure is too well known to need any com- tion to recommend it, but possibly a few leading prin-

ciples, whereby it may be distinguished from some kinds of clay that nearly resemble it, may prove acceptable. The true marl is discovered by the action of air, fire, water or vinegar. If true marl be exposed in a lump of three or four pounds weight, to the air, the nitrous quality of the latter, and its dews, will break the marl into small parts, and there will be an hoary, or white congelation, on that part of it which is exposed to the sun. Real marl, when thrown into the fire, crackles like salt. To try marl by water, place a piece of it dried, in a glass, and thereon pour as much water as will cover it: if it be true marl, it will gradually moulder, and dissolve into a liquid soap, and an ebullition will be apparent, as it unites with the water. In vinegar, the truth of marl is evinced by an effervescence much stronger than that produced by water. Marl is of various colours, viz. blue, white, yellow, red, and other colours; but difference of colour makes no alteration in its virtue, if its truth is proved by either criterion before set forth. As to the quantity used per acre, it is so variable, as to preclude the establishment of a general rule in adopting it; I shall therefore recommend it to be ascertained how much is proper, by a process similar to that which I have suggested for determining in what quantity lime should be used as a manure.

Compost, or manure from the stables and farm-yards, is chiefly relied upon as a general manure; but much of the virtue to be produced by it, depends upon its union with lime, and the use of it in a proper state. By incorporating it with lime, its fertilizing power is increased, and it is prevented from becoming a harbour for insects. This union also destroys the seeds of weeds, which, more or less, are inseparable from dung. It should be kept for some time, until it grows mild, as its salts are of so powerful a nature, as to be injurious to all roots, if it be applied before it has undergone proper fermentation. When mixed with earth in the course of its fermentation, it is rendered more ferti-

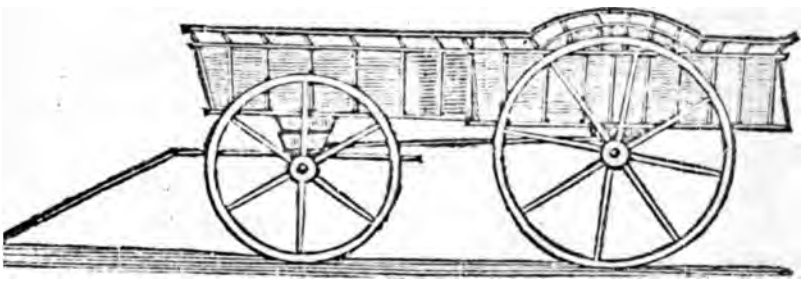
To these manures, may be added a few others of equal utility, but which are in a great measure disre-
. One of the best improvers of land, abounds in *its rata* ; if this be accurately examined, a corrective will nd for almost every imperfection in the surface soil.
sand is another manure of great advantage to land, and to be supplied in this county, at a small expence. It is larly well adapted for cold strong land, and loam inclin- clay. *Shells* from the sea side, form another valuable e. The *sea weed* that is there found, is also very fer- when burnt, and the ashes distributed upon the land. and such kind of stony plants, that grow on the rocks, ed with salts which are very beneficial to land; but as ubstances are hard, the improvement is not the first or year after they are laid on the ground, because they e time to pulverize them before their salts can mix with rth, to impregnate it. The consequence is, that their e is lasting. Sand, and the smaller kind of sea weeds, land for six or seven years. Corals, and other hard nces of the like nature, will continue many years longer.
ng-heaps are not so well formed, or deposited, as they be; frequently they are made on level land, sometimes t which is inclined, and often even on elevated spots: h case, the juices of the dung, which form the most ing part of it, escape from it, and are either washed by rains, or left to evaporate. The form of ground on dung is intended to be laid, should, in order to ob- his objection, be excavated, so as to resemble the in- part of a shield, and the dung should never be placed d the skirts of it, for then the juices could not be lost; would precipitate into this excavated space, and be again ed by the dung deposited within it.

PLOUGHS,

PLOUGHS, CARTS, AND IMPLEMENTS OF HUSBANDRY.

THERE is nothing peculiar in the construction of the ploughs commonly used in this county; possibly, if the plough-beam and share-beam are made a few inches longer between the sheath and the plough tail, they will go with more ease to the horses and oxen employed to work them. Constant attention should be paid to the coulter and share, that they be so tempered as to cut the ground clean, that it may be laid close to the furrow that was ploughed immediately before; for without care in this particular, a small ridge is left standing between, which breeds thistles and other weeds. The plough should also be varied in the strength of its make, to suit the different lands upon which it is to work.

The carts are convenient and strong, but so small, that I think the introduction of a neat light waggon would answer much better; I have therefore subjoined a sketch of the Gloucestershire waggon, which is as perfect a carriage of this kind as I have ever seen.



The implements of husbandry are simple, well constructed, answer the purposes for which they are designed, and are, in general, similar to those in common use throughout the kingdom.

In

espect to the implement for paring soil, the working
is of so laborious a nature, that I have long studied
se a substitute for it, that might be drawn by cattle:
s a simple broad *share*, thus formed,

nexed to a light plough, in place of the common share,
answer this purpose: the dimension of it would of
be proportioned to the breadth of the line pared by the
n implement. By means of two coulters, fixed so as
at due distances above the share, the sward would, I
be cleared from the plough as it advanced; but possi-
s might be better effected by raising, and giving an
o the centre of the share, so that it might divide the
nd throw it off equally to the right and left.

E USAGE OF OXEN AND HORSES IN TILLAGE.

TH are used in this county, and frequently in the same
wherein they work together with much docility. By
the natural inequality in the pace of these animals seems
d, and they draw together with uniform exertion. In
parts, however, horses and oxen are worked separately,
thout any superior advantage, unless where speed and
power is required, and then the horse team is certainly
preferred.

SEED TIME AND HARVEST*.

OATS are sown early in March; barley in April; and wheat about Michaelmas, or the beginning of October. Harvest commences from the middle of August, and continues to the first or second week in September. But there is too much attention paid to custom herein, and too little regard given to nature, from whom only, certain rules can be drawn, and by whom they are offered to all who wish to be benefited by them. That we may derive information from this sublime source, let a small portion of the growth of every field of different grains be preserved beyond harvest, to operate as a rule to govern succeeding sowings; for when the grain begins to fall naturally from these stalks, the propriety of sowing will be proclaimed by the truest testimony.

It is observed, that when the oat catkins begin to shed their seed, it is a proper time to sow barley; and as Dr. LINNÆUS states, that in Sweden, barley is sown when the birch tree leafs, why might not some other tree serve to direct the farmer as to other seeds? Nature always takes the easiest and shortest way in all her operations; he therefore, who would imitate her, must do the same. The same Power which brings forth the leaves of trees, will make the grain vegetate, and early sowing must accelerate harvest. If a

* As a proof how attentive the ancient Jews were to husbandry, the following may be quoted.

"Doth the ploughman plough all day to sow? Doth he open and break the clods of his ground?

"When he hath made plain the face thereof, doth he not cast abroad the fitches, and scatter the cummin, and cast in the principal wheat, and the appointed barley, and the rie, in their place?

"For his God doth instruct him to discretion, and doth teach him."—Isaiah, xxviii. 24th, 25th and 26th verses.

Thus, it was not any seed that was sown, but the *principal* wheat, and the *appointed* barley and rye; and the great attention that was shewn to such particulars, may account for the extraordinary fertility of Judea, which modern unbelievers affect to doubt.

course

of observations were made on the leafing of trees, for
rpose of governing the periods of sowing various sorts
in, some principles of universal utility would be esta-
l.

night also be advisable to note the different days in the
, on which the same sort of grain was sown on similar
rious soils, that, upon the respective crops being reaped,
ght be ascertained which period was most proper for
g such grain. Nature is intelligence upon all subjects;
truly so, are those who with virtue's view, read her
her works. Principle will be their guide, and success
eward.

OPEN FIELDS.

E land in tillage, or appropriated to grazing, is general-
osed; open, or common fields, are rarely met with in
Wales. It is a mode of occupation only practised there
e few instances, where ecclesiastical and private pro-
re blended.

ADVANTAGES OF INCLOSURES.

ESE are various and great; immediately as new inclo-
re compleated, rent rises considerably above the ex-
of inclosing, and continues progressively to increase in
tion as the culture of the land is improved. The quan-
d quality of produce are augmented by inclosures, as
rotect the crops from blight and winds, and when form-
hedges, purify the air. Every plant attracts and ab-
hlogistic vapour, and generates pure air; hedges, by

being higher than the crops that they fence, have a superior attractive and absorbent power; and hence are frequently found to arrest a blight, and prevent its baneful influence on the crop; and they always extend health to the crops that they surround. Particular attention should be paid to the north and east fences; they should be planted thicker than those on the south and west, as they are more liable to decay, or be injured by bleak winds. In respect to stock, they are certainly improved by inclosures; they become less wild, and fatten faster than in open land; they are more immediately in the farmer's view, and are more readily obtained for the purposes of the farm; as to milch cows in particular, this is a great advantage.

SIZE OF INCLOSURES.

THEY are very variable; from two to thirty acres; upon a grazing farm they are principally large. A clump of trees should be more frequently planted in the centre of them, as they contribute much to the comfort of cattle in hot weather, by shading them from heat, and keeping off the flies. Ditches should be more frequently made within the fence; they serve for drains, and they protect the hedges from being injured by the cattle. In laying out inclosures, the spring that is to supply the grounds with water, should be so left, in respect to the boundaries, that the same pond might accommodate two, three, or four grounds with water, by which means a considerable expence would be saved, and less ground wasted for this purpose. Ponds should also be so formed, as to be emptied with ease by means of a flood-gate. Manure would be furnished each time that the pond was cleaned, and the water would be rendered more pure for cattle by this prac-

FLUENCE OF INCLOSURES ON POPULATION.

CLOSURES increase farms, and consequently promote lation. By building small houses, population is also in- ed, as is particularly evident in the case of *Morris Town*, in this county, upon the scite of which not a single e was erected sixteen years ago; now there are 141 es, containing 218 men, and 129 women, 120 male ren, and 152 female children; in all, 619 souls. The ic spirited proprietor of these buildings, has erected and wed a chapel, wherein English Service is performed to enants.

he land contiguous to this place, formerly lett for four ngs per acre; it now produces thirty shillings per acre. s one great means of augmenting population, it is parti- rly essential that marriage should meet with every reason- encouragement. It is this honourable rite that gives a g generation to a nation, who will equally prove its or- ent and safeguard. Much to the praise of the British ion may it be said, that this rite receives a respect, and ns with a purity, that few other kingdoms equal, and no one can surpass throughout the world.

XTENT OF WASTE LANDS, AND USAGE OF THEM.

HE waste land in this county is considerable; computed to unt to upwards of 120,000 acres; upon which common, hout stint, is exercised by the occupiers in the vicinity of waste land. The clear definition of rights, tends very much

much to their security, and to the most profitable exercise of them. With respect to this assumed right of common without stint, its fallacy is evinced by its indefinite character. In truth, no right of common can legally go beyond this rule—that the estate creating it, shall be able to support in winter the stock that is depastured upon such waste in summer. The common rights annexed to houses and cottages, are generally limited, and fairly exercised. Those for estates should also be reduced to equal certainty. This, it is trusted, will be effected by the General Inclosure Bill now pending before Parliament, a measure which, whether considered in its tendency to promote the public good, or to substantiate and render more valuable private rights, does equal honour to the noble institution under whose auspices it is brought forward.

IMPROVEMENT OF WASTE LANDS.

A LARGE portion of these lands consists of a rich loam, fitted for the growth of every sort of grain, pulse, &c. Other parts, that consist of a limestone soil, might be converted into pastures for feeding sheep, for which purpose they are well adapted, from the healthy herbage that they produce for such animals, insomuch that sheep are rarely known to rot on this soil. There are other considerable portions, whereon timber would grow to great advantage.

As to correcting the present mode of commonage on these waste lands, it might certainly be done, so as to give an equitable establishment to the respective rights of the commoners; but not without a considerable expence, and an application to Parliament. But it is presumed that the Inclosure Bill before-mentioned, will preclude the necessity of such an application, by inducing the parties interested, to act under its salutary and plain directions.

HE RATE OF WAGES, AND HOURS OF LABOUR.

HE lowness of husbandmen's wages at the present pe- appeals persuasively to humanity for redress: where have wives and young families, the price paid for their r is insufficient to procure them the common necessaries e. It may be said, that if this be the case, their respec- parishes must, and in many cases do, give them relief rtionate to their wants. But it seems to me to be a hip of great magnitude, that those whose daily industry shes plenty to others, should be driven to solicit as a that portion of food which is essential to the preserva- of their strength. It is a right to which they have an urable claim, and which cannot be withheld without ion of the first principles of justice, or be administered m as a matter of favour, without shame to those who dispose of it. The peasant and his family require but omforts, and all that are supplied to them, they receive a gratitude that augments the general happiness of the n. Let not, therefore, the farmer neglect to improve tuation of those to whom he is so much indebted. Let ollow the example of those nobility and gentry in this, ther parts of the kingdom, who have given such hu- attention to the peasantry, and whose well-timed libe- hath so much alleviated their distress. At a time when is at a price hardly ever heard of before, let not the of that toil by which it was secured, be forgotten. I e anxious advocate of the peasantry, because I admire virtues. These have shewn to me, subordination in all tive beauty, and proved to me, that this principle is tamina of all good government. A British peasantry rather resign their existence to the gracious Author who

who gave it, than seek to prolong it by disturbing the peace of society.

Wages in this district, are from 5 or 6l. to 8, 9, and 10l. per annum. Labourers receive 1s. 1s. 6d. and sometimes 1s. 8d. per day. Piece-work is more profitable to the labourer, and is also advantageous to the farmer, as more of it is generally done within a given time, than when the common course of employ is pursued; but there is not much performed in this way. In summer, labourers work from six in the morning till seven or eight in the evening. In the winter, they work from seven in the morning to six in the evening.

DRAINING.

The inclined situation of a great part of this country, supersedes the necessity of draining. In parts where it is necessary, this improvement is not so frequently introduced as it ought to be, but it is well done where it is practised. The depth of the drains is governed by the situation of the springs, the nature of the soil, and the quantity of the water to be carried off. They use both open and covered drains; the latter are filled with stones, and the turf laid upon the surface. The stones from the sea side are adapted for this purpose, for being smooth, and generally round, the water passes more freely between them.

PARING AND BURNING,

Is practised for the purpose of converting ancient pasture, or barren land, to tillage. The turf is cut in lines of about

breadth, collected into heaps, burnt, and the ashes
ed equally over the land. As an introduction to cul-
certainly answers well, and seems to be the best
hat can be taken; a frequent repetition of it might
prove injurious, but the skilful farmer does not ex-
self to this risk, but pursues his course of culture by
eliorating means as render it unnecessary to resort to
ice of paring and burning a second time.

DS, AND THE SYSTEM OF THEIR MANAGEMENT.

plantations in this county are numerous, and ma-
a way that does great credit to the respective pro-
JOHN MORRIS, Esq. of Clasemont, is one of the
rovers in this line: to him I am much indebted for
wing interesting particulars respecting his own
He has been a planter about twenty-five years, in
riod he has planted above 500,000 trees, principally
ak, and ash; many sycamore, firs, larches, and
sides Spanish chesnuts, plane, elm, &c. and Lom-
plars. He has raised nearly all his trees from the
hen they are about three feet high, he plants them
a yard distant; when the trees increase in size, so
to touch each other, they are taken out to make
lantations; so that every young wood is in fact a
His fences are particularly strong, and are con-
tended to. The trees are annually examined, and
re not thriving, are hoed round as you would tur-
When the soil is particularly adhesive, Mr. MORRIS
s a crop of potatoes, which produces an excellent
All stagnated water is carefully drained off. He
ees of various kinds in each acre of ground, by
which

which he observes the sort that best suits the soil, exposure, &c. Open to the sea breezes, he finds sycamore and elm particularly prosper. This gentleman's regular course of planting, is now about 10,000 trees annually, which he proposes to continue as long as he has any ground on his estate most suitable to that purpose.

Where any large tract of land is intended to be appropriated for planting spring wood, it should be divided into portions, and so planted at successive periods, or at once, by trees of different ages, that they may be felled in succession, one by one every year, and so managed, that when the last portion has been felled, the wood on the first may be in train to fell again in the succeeding year. In removing trees to set again, the roots should be carefully preserved; if any are broken or bruised, they should be cut off, otherwise such roots will die. If the trees removed are ash, elm, or oak, the lower boughs should be cut off, as they prevent the trees from thriving, for the trees will be loosened at the roots by every wind, if they are encumbered with boughs. The tops should be carefully preserved. It is also recommended, to make a mark which side of the tree stood toward the sun, that the tree may be reset in the same direction. If there is occasion to cut off the tops of timber trees, they should be cut about three or four feet above any timber: trees have a property to grow to a certain height, after attaining which, they increase in breadth. When they have attained this height, by being properly lopped and cropped, they will bear much more wood than if they had not undergone this operation.

The cultivation of osiers is very profitable, as appears by the account I obtained in this county, of the produce of this article from one acre of land, originally of the value of six shillings per annum. About fifteen years ago, it was planted with sets brought from the neighbourhood of London, at about a yard from each other. Since the second year, the

have been cut regularly, and the produce has been
y about 20,000 rods annually, selling at five shillings
sand, and bringing the annual rent of five pounds,
y little trouble. The sets should be taken from two
l shoots, about three feet long, cut pointed at the
d, and thrust into the banks of rivers, or other wet
ne and a half, or two feet deep, and in two years
l be fit to cut for use. The cultivation of the osier
far more desirable now than heretofore, on account
creased demand there is for this article. The scarcity
induced the Society for the Encouragement of Arts,
London, to offer a premium, in order to increase the
of osiers, for making baskets, &c.
principally owing to the confined culture of the osier
ingdom, that the present scarcity originates; but it
n be obviated, as the public attention is now so parti-
lirected to the growth of this article. There is some
ion in my Report for Monmouthshire, upon the
on of the osier, that may possibly be useful to those
sh for further instruction respecting it.

THE PRICE OF PROVISIONS,

WHETHER IT IS LIKELY TO BE STEADY, TO RISE, OR TO FALL.

abundance of all sorts of provisions, excepting grain*,
hich this county abounds, has considerably counter-
act increase of price which has been so general through-
kingdom; and I believe it will be generally found,

* cause, in some degree, of the scarcity of grain in this county, I have explained, in p. 20.

that those counties wherein small farms are prevalent, have been able most successfully to encounter and subdue this evil. The custom of hoarding corn, which is too commonly practised by large farmers, contributes much to enhance its price, while their inattention to the breed of pigs and poultry (which are hardly ever unattended to by the small farmer), renders the demand for corn greater, by lessening the variety of provisions. Whenever provisions are high in price, it seems to be a first principle in good policy, to increase the articles of them. The more frequent establishment of fisheries upon the sea coast, would be very conducive to this end, and open to those engaged in them a profitable source of commerce, by which other parts of the kingdom might be aided in their laudable endeavours to lower the price of provisions.

The present price of provisions within this county, may be stated nearly as follows:

Wheat, from 7s. to 9s. 6d. per bushel of ten gallons.
Barley, from 3s. 6d. to 4s. ditto.
Oats, from 2s. to 3s. ditto.
Beef, from 3d. to 5d. per lb.
Mutton, from 3d. to 5d. ditto.
Bacon, from 3d. to 5d. ditto.
Cheese, from 4d. to 5d. ditto.
Butter, from 6d. to 10d. ditto.

There is every reason to believe, that these prices will not rise; and there is good ground to hope, that by the wise and humane exertions of the affluent in this county, to obtain supplies of grain from foreign markets, the price of provisions will speedily be reduced. It will also be a subject of great comfort, not only to the inhabitants of this county, but to the whole kingdom, to reflect, that the General Inclosure Bill will afford them a means of preventing any serious rise of the price of provisions from happening in future; for as the value of all articles of provision is increased by their scarcity, that proceeding which will promote an extended culti-

ation, must doubtless produce plenty, and render the ness of provision permanent.

THE STATE OF THE ROADS,
H PUBLIC AND PAROCHIAL, AND OBSERVATIONS ON THEIR MANAGEMENT.

E public roads are good. That which leads from Car- Cowbridge, Pyle, Neath, and Swansea, is excellent. rospect from it, in various parts, is beautifully pictu-, extending over diversities of hill and dale, fertile , enriched with numerous herds and flocks, well-cul- corn fields, luxuriant plantations, modest churches, neat ngs, mouldering ruins, and terminating with the Bristol el and the coast of Devon. At once to see the swell- ils of commerce, and the steady chearful operations of sbandman; to view the sublimity of nature, and ob- the elegant efforts of art, arising out of nature's in- ion, inspires a grateful adoration of Divine Power, om and Goodness, and improves our principles while rges our happiness.

e inns on this road afford the best accommodation; the rt of which is enhanced by the respectful civility of proprietors to travellers. That at Pyle, is a distinguish- stance of the exercise of private munificence for the nience of the public.

plications to Parliament, for the improvement of the in this county, have within a few years past, been at- l with an expence of 1200l. Certainly, great good has derived from the powers so obtained; but it is to be ted, that there is not a mode prescribed, by which they be obtained at a less expence. Possibly a General Bill might answer this purpose. Such a measure

must be very desirable to the landed interest, and would tend much, it is presumed, to facilitate and encourage the improvement of roads. Most of the parochial roads in this county are imperfect, and some of them in a very ruinous state. There is no excuse for this neglect, as materials for their repair are at hand, and the statute-labour, if fairly given, would obviate all complaint. But there seems to be a general failure in pursuing the directions of the statutes upon this subject—they have wisely directed a controuling power to be appointed in every parish, to attend to this duty; and without such a power, it never will be properly done; for where many are equally interested in a business, and no particular person has the direction of it, irregularity is substituted for system, and industry gives way to indolence. Surveyors of the highways were first ordered to be chosen *in every parish*, by an Act passed in the reign of PHILIP and MARY: therein they were to be appointed by the constable and church-wardens of the parish; but by a subsequent statute, the 13th GEO. III. c. 78, they are to be constituted by two neighbouring justices, and may have salaries allotted them for their trouble. The duty of these officers is so clearly pointed out by the latter statute, and the instruction contained in it is so well calculated to accomplish the purposes for which it was designed, that I am surprized the inhabitants of so many parishes should neglect to avail themselves of the benefit hereby conferred. Let them for a moment, estimate the advantages of good roads, independently of the safety, ease, and pleasure that they experience in travelling over them;—let them consider the benefit accruing to our trade and commerce, by rendering the carriage less expensive upon all sorts of goods and merchandize, whether consisting of provisions of any kind, that are the immediate growth and produce of our lands, or of any other sorts of wares which must have conveyance by land;—let them compare the former rates of carriage with what are now paid, and they will find that

land-

rriage is now thirty per cent. cheaper than it was be-
roads were amended by turnpikes; for a team of
es can now draw twenty hundred weight more on
ads than they could formerly, and with less exertion.
d, in this, as in various other cases of political eco-
affords us an example well worthy of our imitation—
ve done more than admire Roman ingenuity and in-
n this particular; for they have preserved both, by
vn practice. If we compare the remains of the Ro-
ads with the best of our modern ones, we shall find
f the former, that have stood firm and entire for above
ears, *without any repairs*; while ours want reparation
three times, and frequently oftener, in a year. If
f the Roman roads, through any neglect to repair
n time, are decayed in some places, yet there are
hat still remain perfectly entire.

Appian way, which was first carried from Rome to
and afterwards continued from Capua to Brundusium,
n good condition, though it has been a high road
1900 years; and there are some Roman ways in
, which have subsisted upwards of 15 or 1600 years.
r durability may possibly be ascribed to their particu-
cture, I hope that an account of their practice may
improve our own.

y first of all laid open with a plough, two parallel fur-
then the soldiers carried away the light loose earth
y found between the furrows, and dug till they came
rd, firm bottom: they then filled up the fosse, or bed,
they had hollowed, with a more dense and weighty
; as for instance, with a sort of hard sand, or gravel,
ut of the rivers, or dug out of the quarries: this done,
mmed the whole hard down, and smoothed it with
ollers. Nor did they always end their work here,
ntimes (to facilitate the draining off the water, and
ent any dirt or mud from soaking in, which would
infallibly

infallibly undermine and loosen the whole), raised a terrace, or causeway, several feet above the level of the plain, consisting of four layers, or stories, of strong masonry.

On the foundation of earth which, as said before, was firmly compacted and levelled, they spread a covering of cement, made of lime and sand, or hassock, about an inch thick. The first layer which they placed upon the cement, was of large flat stones, laid one upon another ten inches high, and cemented together with well-tempered mortar. The largest stones were ranged along the sides of the causeway. This layer was called *statumen.*

The second layer consisted of stones of a cubical, round, or oval figure, and of many rough, irregular stones, sometimes mixed with potsherds, and pieces of broken tiles and bricks; all these were spread with a shovel over the first coat of stones, and rammed down into the mortar, which cemented them together. This second layer was about eight inches thick, and was called *rudis.*

The third layer consisted of a foot of mortar, not made of beaten tile, for that would have been too expensive, but of chalk, sand, or hassock, mixed with lime, as any of these materials were near at hand. This layer, which was called the *nucleus*, or kernel, filled up all the cavities or interstices in the inferior layers, and settled into a hard, level coat. The great difficulty we find in breaking it now, sufficiently proves how firm a support this was to the upper covering, especially when we consider the extreme hardness of the inferior strata, with which it is so firmly incorporated as to form one compact, impenetrable body, capable of sustaining the greatest weight imaginable.

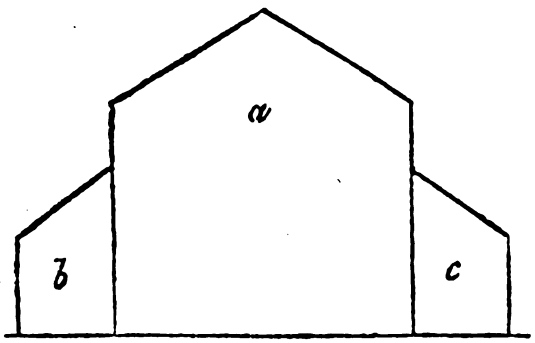
The fourth and last layer, which they called the crust, sometimes consisted of great hard stones cemented together, as we find in the Appian way; and sometimes of gravel, or small flints mixed with gravel, as we find in most of the Roman military ways. The hardest stone of all, the free

d the largest sort of flints, they reserved for their
This layer was called *summa crusta.*
nall stones, flints and gravel, were often brought
r parts, the country people being ordered to gather
heir vineyards, their heaths, and ploughed lands, on
of rivers, and the sea shores, and to bring and lay
he highway side, where the soldiers had occasion
m in their work. Of these materials, the Romans
overing six inches thick upon the third layer, and
on the sides with two borders of earth, which they
ed with heavy stones, which they laid sloping, for
to run off the causeway on the plain beneath, to
s soaking into, and thereby loosening the gravel.
of this precaution, the traveller and carrier in all
joyed the benefit of a hard dry road. It sometimes
that the flint pavement was loosened, by the fall-
of the banks and borders which should support the
he sides; but the internal layers were so closely
d cemented, that they did not suffer much by it,
mage was easily repaired.
ful rules may be drawn from the practice thus re-
ope the insertion of it will not be deemed foreign
duty.

ATE OF FARM-HOUSES AND OFFICES.

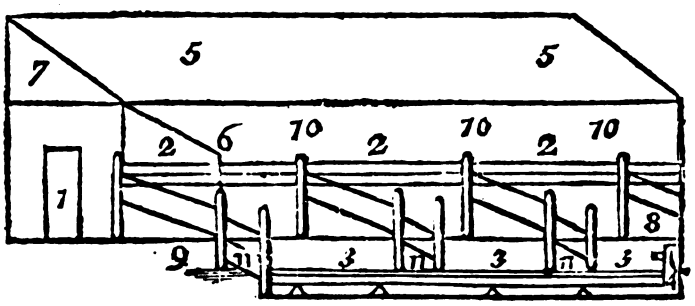
buildings in general, throughout this county, com-
ness with strength and convenience; but they are
xtensively commodious as the various purposes of
y and grazing require. Additions to the barns for
attle, might be made with very little expence, and
found of great utility on grazing farms. The lines
below,

below, shew the manner in which this improvement is to be effected.



a, represents the front of the barn, and b and c the additions laterally to be annexed to it.

The more frequent introduction of ox stalls on farms, and improvement of those that are at present used, would be beneficial to every proprietor. Possibly the sketch below, of the ox stalls that are built in Gloucestershire, may convey some satisfactory information upon this subject.



EXPLANATION.

1, is the door opening into the passage through which the attendant goes to feed the cattle;—2, is the manger into which their food is thrown;—3, is the watering trough, which is bounded

ed by a low wall;—4, is the pump by which the trough plied with water;—5, is the roof of the stalls, which l be more complete, if it extended to 6, as it would helter the cattle from inclement weather;—7, the loft ich hay is deposited for feeding the cattle.

vould be an improvement, if these stalls were erected a declivity, and near to a brook, so that by means of a gate at 8, a stream of water might daily be admitted to hrough the stalls, thereby cleansing them, and forming l manure by the diluted compost running off at 9, into of loose earth (such as scrapings of roads), prepared reception.—11, are gates of communication from one the others. The number and size of these stalls are rtioned to the number and sort of cattle to be annually in them. Shelves are erected against the wall at 10, positing oil cake for the cattle.

THE NATURE OF LEASES,

COVENANTS MOST ADVANTAGEOUS BETWEEN THE LANDLORD AND TENANT.

ASES are granted for lives, and for the common terms ven, fourteen and twenty-one years. The covenants former are not so particular, salutary and restrictive as latter, wherein the tenant covenants to keep the fences air; not to plough up meadow land under a certain y; to expend upon the farm the dung arising from it; to wn a certain portion of the arable land to grass; to crop nd according to the husbandry of the country; and not gn his lease without his landlord's consent. The land- grees to keep the buildings in repair, and to supply the with fence and plough bote. The term that seems to ost conducive to the interests of the landlord and tenant,

is that for twenty-one years, with a mutual power to dissolve it at the expiration of the first seven or fourteen years, upon giving six months notice in writing; for when a course of cropping is prescribed in a lease, which ought always to be done where the general husbandry of the country is an imperfect guide, the tenant is incited to be obedient to it, from a conviction that this conduct will prevent a premature dissolution of his term. He may also be glad to avail himself of this power, if he finds the taking inadequate to his expectations. The tenant should covenant never to take two white crops in succession, but always to introduce an ameliorating or green crop after every crop of grain. He should also covenant to haul and disperse upon the land, any kinds of manure that the landlord may judge likely to improve the staple of the land, so that such manure is to be obtained within a limited distance; and to plant, and fence from the cattle, a certain number of trees annually, on such parts of the farm as are the least adapted for other culture.

THE EFFECTS OF COMMERCE AND MANUFACTURES UPON AGRICULTURE.

So long as commerce and manufactures acknowledge agriculture to be their parent, and act in subordination to her interests, so long will they contribute to enrich, strengthen and ornament every nation; but when the latter is neglected that the former may be pursued, a foreign dependence is created, even for the necessaries of life, which dependence takes from us the balance of trade, and lessens the dignity of the nation. Those who can supply corn, may always command the price of all other articles. What I have expressed on this subject, naturally arises from the state of things in

unty: commerce and manufactures have rapidly in-
therein for some years past; as these have advanced,
ture has declined, consequently the demand for corn
beyond the produce of the county, the expensive mode
ortation has been by necessity resorted to for redress.
hence we learn the duty of a more extended culture of
icle, and that commerce and manufactures can only
nently flourish, where they are succoured and protected
iculture.

CULTURAL PRACTICES IN THIS COUNTY, THAT MAY BE USEFUL IN OTHERS.

rder to judge of the supply of food necessary for the
nd other stock, the ricks of hay are measured every
fore the cattle are taken in for the winter season.
h practice it is ascertained, that one cubic yard weighs
1 qr. 21lb.; hence it is easily calculated whether the
f hay is equal to support the number of cattle intended
ept throughout the winter.

sed furze they use as food for horses, and it is found
ver very well. It is bruised in a machine worked by
and which also cuts straw. It is attended by one
nd cuts two hundred bushels of straw per day into
and bruises four hundred bushels of furze, which is
y eaten by the horses, and seems very nourishing.
g the severe winter of 1795, when hay was so scarce,
particularly useful. The following is a statement of
ekly expence of such keep, mixed with a bushel and
of oats.

	s.	d.
21 bushels of bruised furze per week, valued at	2	6
7 bushels of cut straw and chaff, - - -	0	7
1 ½ Winchester bushel of oats, at 2s. per bushel	3	0
	6	1

Fern is cut when green, put into stacks, and kept for littering cattle in winter; when hay is scarce, it is also used as food for them. This practice may be useful while land continues in a state so uncultivated as to bear only fern, but it is certainly improvident, that such land should not be appropriated to a more profitable purpose.

The buildings throughout this county, small as well as large, have a peculiar air of neatness, owing to their being frequently white-washed: this is a commendable practice, as cleanliness contributes to health. This principle also shews itself in the pavements of the principal towns, which are washed daily, and sand thrown over them, as is done upon the floors of kitchens.

INSTITUTION FOR THE IMPROVEMENT OF AGRICULTURE.

THERE is a society of great respectability established in this county, for the improvement of its agriculture: the distinguished attention of the members who form it, to the advancement of this science, does honour to themselves, and must prove highly beneficial to their country.

ERAL DISPOSITION FOR IMPROVEMENT.

many, this is manifested by the best of proofs, the iful appearance of their farms; others, less active and gent, are by slow degrees copying their example, and is believed, will in time be governed by it. The dis- of improvement naturally incites us to emulate it.

IMPROVE-

IMPROVEMENTS.

TYTHES.

A GENERAL commutation for tythes would produce much good. Whatever measure tends to preserve peace among any particular class of men in society, strengthens the common interest, and increases the harmony of the nation.

WASTES.

THE inclosure of these will prove an object of great wealth and comfort. This being done, industry will never want employment, and provisions will become cheaper, and more plentiful.

RELIEF OF THE POOR.

IT would be humane and politic, not to suffer overseers to estimate the distresses, and extend relief to the poor; it is too great a power to rest in such hands. The grievances of our fellow-creatures should be inquired into with intelligence, calmness and kindness, and be *effectually* relieved; not by the encouragement of indolence or licentiousness, but by awakening them to industry, and fairly rewarding their practice

. Possibly this might be effected by appointing a com-
on of inquiry into the state of the poor, for every parish,
e composed of five, or more, respectable inhabitants,
ng whom the clergyman to be constantly one. The ap-
tment might take place annually, at the quarter sessions.
se commissioners might meet monthly, to hear and re-
grievances among the poor; to provide work for them,
rder proper relief to their families. Such commission-
ould be empowered to make rates upon the parish, to
tified as at present, by two magistrates, and should keep
ar accounts, and duly pass them at the quarter sessions.
illiteracy, in general, of the present overseers, totally
alifies them for the consequential office with which they
nveste., and I am sorry to add, that it has been too
exercised with an inhumanity that has brought it into
ved disgrace.

THE SEA-COAST.

HE frequent wrecks that have happened upon that part
which bounds this county, suggests to me the propriety
improvement, that I hope may prevent this calamity in
e. If a light-house was erected upon such part of the
, between Swansea and Cardiff, as seafaring men at
places shall judge most likely to preserve a safe offing
ipping, the navigation, which is now perilous, would
ne free from danger.

FERRIES.

REGULATIONS respecting those at Breton, Swansea, and Llwghor, are much wanting, for the improvement of the proprietors' interests therein, and the accommodation of travellers.

FRIENDLY SOCIETIES.

REFLECTION upon the utility of these institutions, has introduced to my mind a plan somewhat similar, the establishment of which may be in conjunction with the former, and I trust will be found to be of equal benefit to the kingdom: it is, that the same societies, who by their monthly subscriptions are guarding against the distresses of sickness, should also create a fund for increasing the comforts of themselves and families in a state of health. Their subscriptions for this purpose might be suffered to accumulate for three years, at the expiration of which period, each member should be allowed to receive a share equal to two years subscription, for the express purpose of repairing their dwellings, or purchasing such articles of furniture as might make their homes more comfortable. Thus, by making a division of the subscriptions every third year, reserving at each period one year's subscription, and never receiving more out of the latter than the interest, they would in a few years supply themselves with many conveniencies, and have the pleasure of seeing substantiated for the accommodation of their families, those earnings which, without such an institution, might have been squandered in idleness. As to the principal of the untouched fund, it might, in the course of a certain number of years, be divided among the members, for the purpose of each of them appren-

enticing one of their sons to some useful trade. Every lation that gives to character, in whatever station, addi- l respect, makes mankind more anxious to preserve it, consequently promotes the best interests of virtue.

CONCLUSION.

would be doing injustice to my own feelings, if I con- ed this Report, without expressing my sincere gratitude he high honour that the BOARD of AGRICULTURE conferred on me, by appointing me to survey this and djoining county. It has been my anxious ambition to ve so estimable a mark of their favour, and to render service to my country, which the duty of the office nded.

y grateful acknowledgments are also due to the respect- proprietors of Glamorganshire, for the assistance that so readily rendered to me in the execution of this work. y will further oblige me, by correcting it when sent to , with equal freedom.

must not omit to notice the conduct of the community is county, during the late trying period, when the scar- of grain was so severely felt: it evinced a religious re- for the inestimable blessings of peace and order; proved oodness of their hearts, and did honour to their king, constitution, and country.

APPENDIX

TO THE

GLAMORGANSHIRE REPORT.

NUMBER I.

following intelligent Answers to the Queries proposed by the BOARD of AGRI E, were obligingly communicated by JOHN FRANKLEN, Esq. of Lanni for insertion in the previous Report; but they did not arrive until after it ha to the press. This gentleman having about 40,000 acres of land within th nder his care, his agricultural data are very valuable.

oil.—A blueish clay on a blue lime-stone, from one to three feet below th

ccupation.—This being the level, or flat part of the country, near Brist the farms are from 50l. to 200l. and a few larger.

inds of Land.—A mixture, though some jobbers and graziers rent grass a only.

rasses.—Mostly clover, rye-grass and trefoil, with some saint-foin. *Stock-* cattle and sheep, and hogs of a tolerable breed, though improveable.

Vatering Land.—Very little well watered, though much may be done, if t amended to empower the turning of the water.

rains cultivated.—Wheat, barley, oats.

otation of Crops.—Of late, beans, pease, turnips, clover, &c. are cultivat ate crops, and answer exceedingly well.

allowing is practised.

Manures.—Lime is mostly used; too little attention is paid to dunghills.

mplements of Husbandry.—The plough mostly used, is an old-fashioned, lon one. The carts too large—waggons the common form, for four or fi

11. *Oxen and Horses.*—Oxen in yokes are more used than horses, though them both double in yokes and single in collars, and horses both single and doubl they do best on roads too hard for the oxen, without shoeing. Oxen are cheapes both are useful on a large farm.

12. *Seed Time and Harvest.*—We sow wheat in October, oats in March, b in April—Harvest in September.

13. *Wastes.*—No common fields, but many commons or wastes, and about t fourths of the country inclosed.

14. *Advantages of Inclosures.*—The rents doubled, and often more, consequen great increase of produce, and improvement of stock.

15. *Their Size.*—From two to twenty acres, according to the size of the farm.

16. *Influence of Inclosures on Population.*—Certainly increased by employing people.

17. *Common Fields.*—There are none: but a cheap power, and mode of div and inclosing wastes and commons, is much wished.

18. *Usage of Wastes.*—Mostly grazed in commons, by half-starved horses, and sheep, that yield very little profit.

19. *Improvement of Wastes.*—When divided and enjoyed in severalty, each will be used as is most suitable, in arable, pasture, or planting.

20. *Wages.*—From one shilling to one shilling and six-pence per day, but often get two shillings and six-pence by the job in mowing, reaping, &c. About fourth less in winter. It will find its level in every country.

21. *Draining.*—Too little attention is paid; the covered drains are filled with s or faggots, as is found cheapest, stones being scarce in many places.

22. *Paring and Burning.*—Much less used than formerly, as we find lime an much better.—Landlords forbid it.

23. *If well Wooded, and under what System.*—Not well enough, nor have we good system of preserving the woods.

24. *Price of Provisions.*—Much raised in the last twenty years, owing to th crease of copper and iron works, and the increase of taxes, and price of labour.

25. *Roads.*—Generally very good, owing to the introduction of turnpikes, which the parishes have raised the middle, and made drains. Lime-stone is the covering, broke small.

26. *State of Farm-Houses.*—Not very good, and not well situated, owing pro to want of civilization when men herded in villages for mutual protection.

27. *Leases*—Are too seldom granted on arable farms, to the injury of the com nity, the landlord and the tenant; for no prudent man will grub, moot, drain, fa lime, and sow land, at an expence of eight or ten pounds per acre, without a cert of enjoying his farm long enough to be repaid his expences, and some profit fo risque and trouble. All experienced land-stewards, know how to insert covena prevent the tenant from injuring the farm, and to secure a gradual improvement

ne, or at least fourteen years, is necessary, as much out-set expence may b

Commerce and Manufactures.—Copper, coal, and iron trade, and canals, in
s as to raise the price of labour; but the price of the produce of the land i
proportion.

If the Agricultural Practices within the County can be serviceable to other Counti
e superior to some counties, and inferior to others, in our practice.

Agricultural Societies.—A society to encourage agriculture has been beneficiall
l above twenty years.

Turn for Improvement.—The rising generation have a turn for improvemen
best excited by honorary and pecuniary rewards.

Improvements.—A commutation for tythe, leases to be granted, and premiun
the best stock and the best husbandry.

What situations, &c. occasion the Rot in Sheep.—Flat low wet land, where w
in winter, and where a blueish grass, called carnation grass, is found.

What Herbage causes such effect.—Carnation grass is the worst symptom; she
dry, and feed in winter on dry land, where no water stands.

To prevent the Rot in Sheep.—The best way, is to lay it in broad high ridg
ns to carry off the water; and if the land be well limed, it becomes mo
produces more healthy and sweet herbage for sheep.

The nature of Soil, and Herbage, where Sheep took Rot last Winter, &c.—W
or no rot last winter, or at any time in my memory, owing, I think, to t
ne, and the care we take not to keep sheep in winter on low flat land whe
ges, and where the blue carnation grass is found.

Are those Lands old Sward, or sown with Seeds, or both?—Generally
where the above-mentioned grass is mostly found; and if the land has be
, it is ridged and water-furrowed, and limed, and laid down with rye-gr
il, which will not rot the sheep.

Are there any obstacles to Improvement?—Yes, three: the want of leases;
inclose wastes; and a commutation for tythes.

---

want of room and time, as well as my present indisposition, prevent my bei
ticular in answering each question; but I have long managed some of t
tates in this county, and farmed pretty largely, and always promoted t
ure Society, and the general improvement of my native country, and the g
efit of the community; and I think that few counties of the same size in t
ave been more improved in the last forty years, in regard to manufactori
re, roads, canals, gentlemen's houses, &c.—So that I conceive, if there w
cial Society in every county in this island, to correspond and co-operate w
RD of AGRICULTURE, and if Government would assist the Board to obt
ts of Parliament and aids, as are very judiciously recommended in many w
wr

wrote Agricultural Surveys from all parts of the island, we shall never again be ob
to import corn at an immense expence, or to tax the British farmer to pay bou
for importing corn from other countries, to enrich those countries, when we r
with less expence and encouragement promote plenty at home, and have a surpl
export, and supply other countries with the necessaries of life. Some years a
troubled Mr. YOUNG with one or two letters on this subject, which he inserted i
Annals; and I shall be glad if I can at any time promote the public good, wh
trust will be more increased by the patriotism of the BOARD of AGRICULTURE,
Royal Patronage, than by any other institution that now is, or ever was in this Isl

I have the Honour to be,

The Honourable Board's

Most obedient humble Servant,

JOHN FRANKLE

Lannihangle, April 7, 1796.

NUMBER II.

ON THE USE OF COAL SLACK BY ITSELF, AND MIXED WITH LI

BY RICHARD CRAWSHAY, ESQ.

Parish of Myrther, Glamorga

ABOUT four years ago, I tried the following dressings of a piece of meadow
quantity about eight acres: the whole field is equally a dry soil, the form oblong
on a hill side, dipping from West to East. I divided it into three parts, thus
manured as under:

No. 1.	No. 2.	No. 3.
Stable muck mixed with braes, a small coak which drips from the air furnace grates.	Wholly the slack of coals, that we generally throw away in large quantities.	Half lime, mixed with or pond dirt.

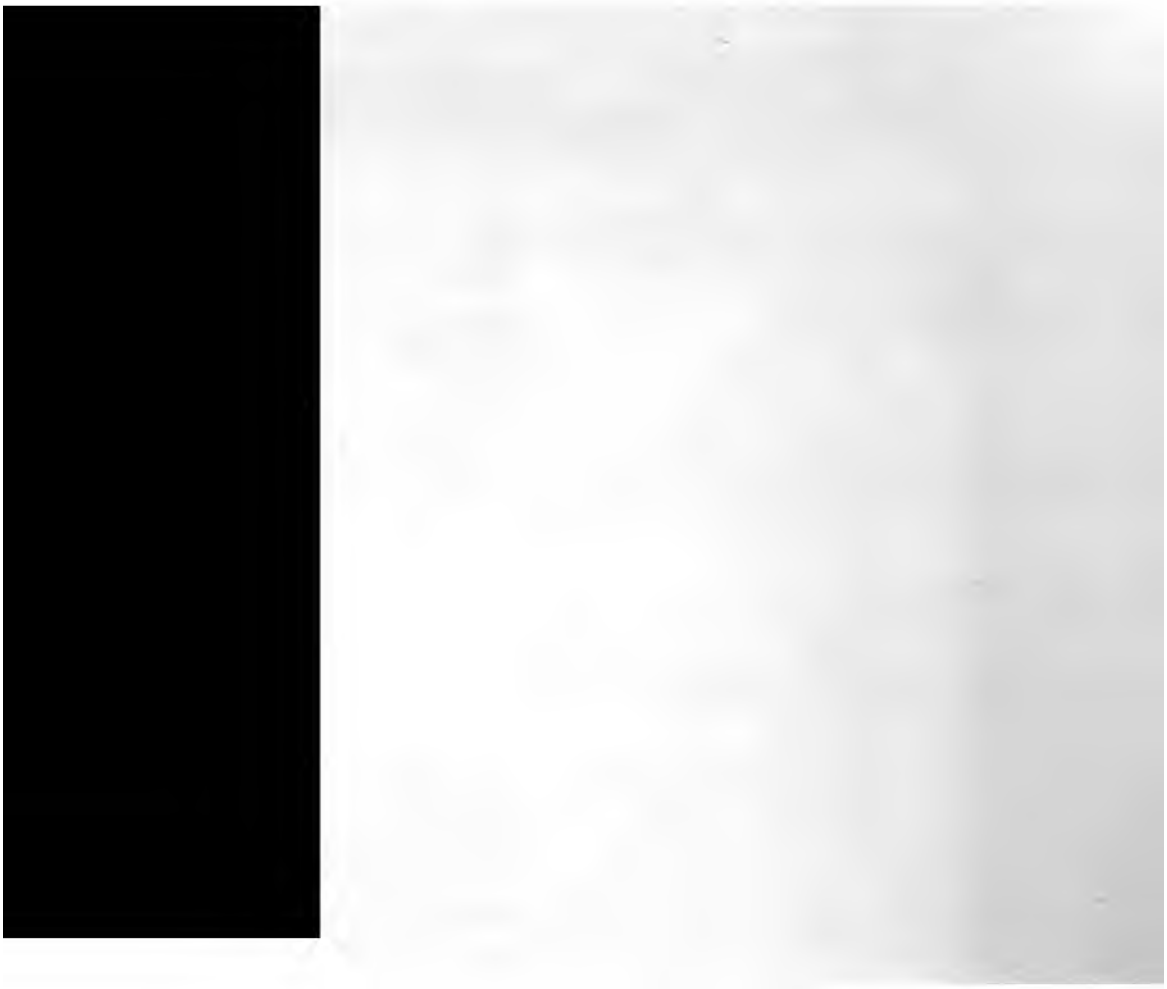
No. 2. exhibited grass like a green ribbon, before the others shewed any s
No. 1 followed. No. 3 was last, and proved the smallest crop of hay. Since that
I dress the dry lands every year with the coal slack alone, or mixed with lime, an
better crops than formerly from the same lands, which are very poor, and used t
only short hay fit for cows. I now carry from 20 to 30 cwt. of good horses
and have the stable muck left for the ploughed lands. On wet and boggy soils,

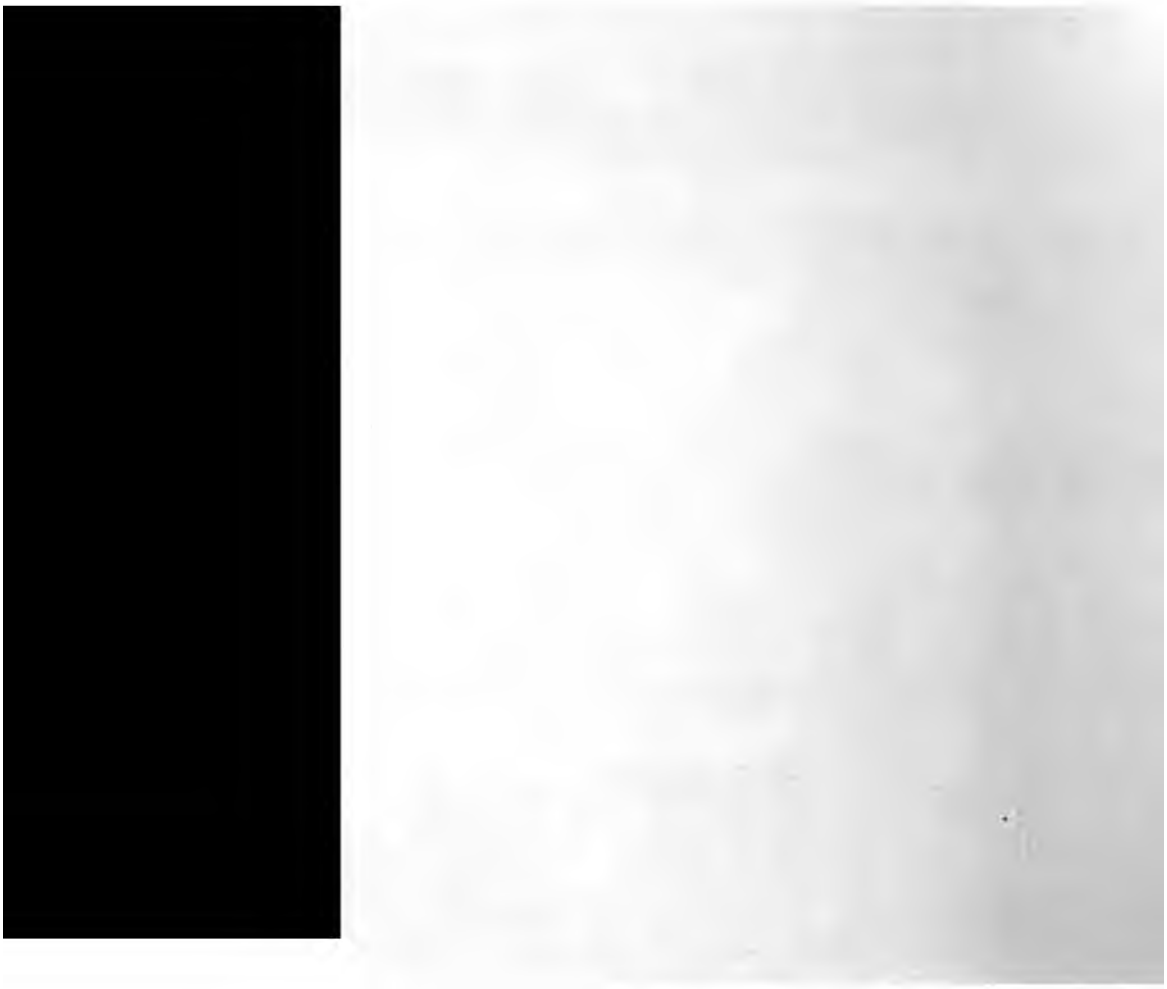
ixed with lime answers better than any other dressing we have. The
e there is a fall on lands (*i. e.* an inclined plain) make the best drain in the
:

oor hill sides, which are the tumble down of the mountains, more of stone
hen I break up first, the crop is oats, or oats with vetches, for green fodder
; or hay, if the season will permit. Second, wheat, winter fallow and
Third, barley with clover. Fourth, clover; winter fallow, well dressed;
h oats. These, I believe, are the only fallows needful. The lands, with
fter this product be laid down with seeds.

HN SINCLAIR, Bart.
ident of the Board
of Agriculture.

FINIS.





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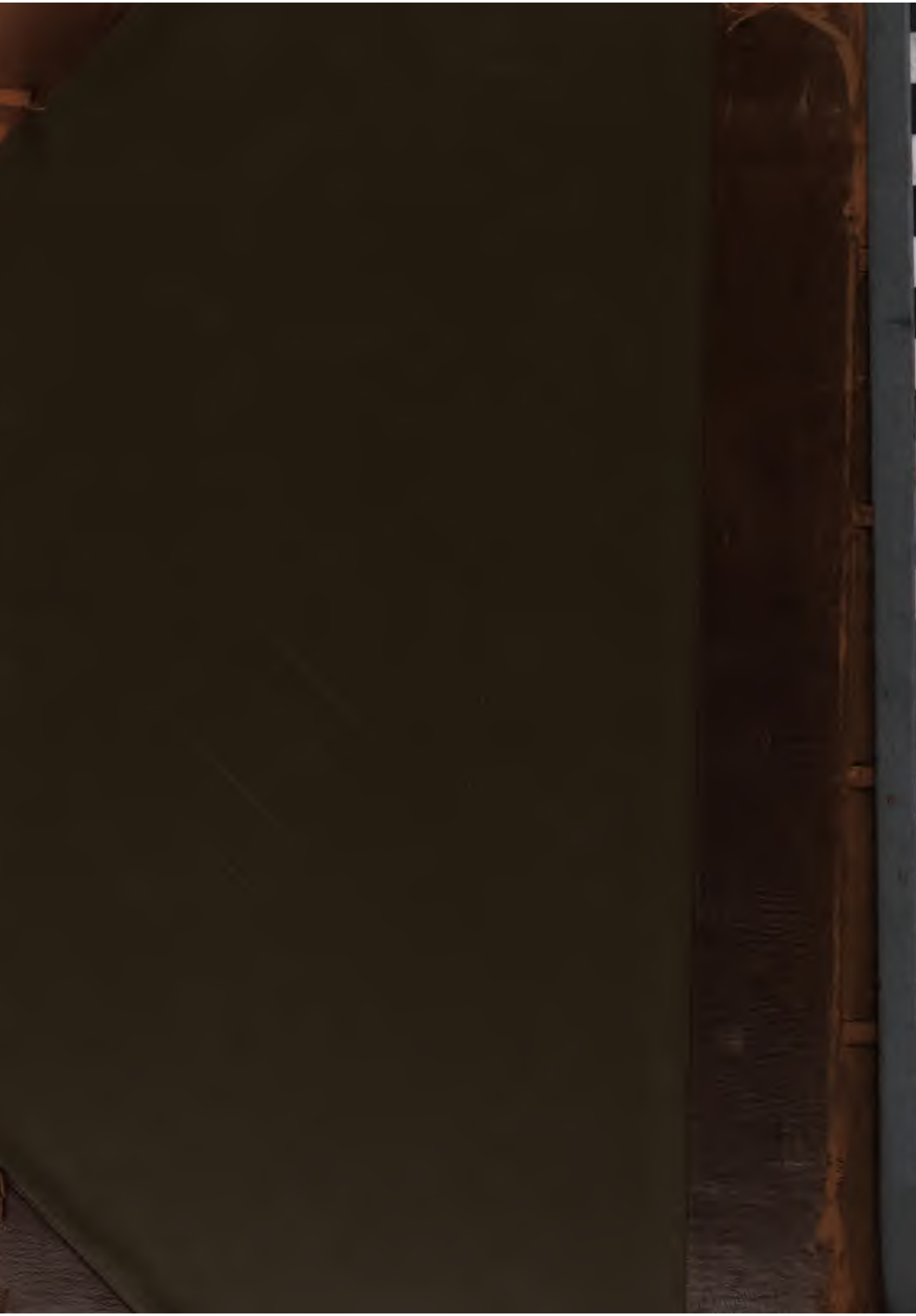
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